UNIV. OF
TORONTO
LIBRARY

BINDING LIST MAR 1 5 1922

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/mindreview29edinuoft

3021

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

ABERDEEN: THE UNIVERSITY PRESS

PHILOS.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

EDITED BY

PROFESSOR G. F. STOUT,

WITH THE CO-OPERATION OF PROFESSOR E. B. TITCHENER, AMERICAN EDITORIAL REPRESENTATIVE, AND OF PROFESSOR WARD, PROFESSOR PRINGLE-PATTISON, DAVID MORRISON, M.A., AND OTHER MEMBERS OF AN ADVISORY COMMITTEE.

NEW SERIES.

VOL. XXIX.—1920.

17/253
15/5/22

LONDON:
MACMILLAN & CO., LIMITED,
ST. MARTIN'S STREET, W.C.
1920.

B
1
M65
n.s.v. 29

CONTENTS OF VOLUME XXIX.

(*NEW SERIES.*)

ARTICLES.

	PAGE
BROAD, C. D.—The Relation between Induction and Probability (II.)	11
,, ,, —The Philosophical Aspect of the Theory of Relativity (*Symposium*)	490
CARR, H. W.—The Concept of Mind Energy	1
EDDINGTON, A. S.—The Meaning of Matter and the Laws of Nature according to the Theory of Relativity	145
EDDINGTON, A. S.—Philosophical Aspect of the Theory of Relativity (*Symposium*)	415
GREGORY, J. C.—Do we know Other Minds Mediately or Immediately?	446
HUGHESDON, P. J.—Phenomenal Symbolism in Art	186
JOACHIM, H. H.—The Meaning of Meaning (*Symposium*)	404
LINDEMANN, F. A.—The Philosophical Aspect of the Theory of Relativity (*Symposium*)	437
MARSHALL, H. R.—Some Modern Æstheticians	458
RIGNANO, EUGENIO.—A New Theory of Sleep and Dreams	313
ROGERS, A. R.—Some Recent Theories of Consciousness	294
ROSS, W. D.—The Philosophical Aspect of the Theory of Relativity (*Symposium*)	423
RUSSELL, B.—The Meaning of Meaning (*Symposium*)	398
SCHILLER, F. C. S.—The Meaning of Meaning (*Symposium*)	385
THORBURN, W. M.—Omnipotence and Personality	159
WARD, JAMES.—Sense-Knowledge (III.)	129
WATT, H. J.—The Importance of the Sensory Attribute of Order	257
WRINCH, DOROTHY.—On the Nature of Memory	46

DISCUSSIONS.

BOSANQUET, B.—The Notion of a General Will	77
,, ,, —Croce's Æsthetic	212
CARR, H. W.—Mr. Bosanquet on Croce's Æsthetic	207
GALLOWAY, G.—Idealism and the External World	72
LODGE, R. C.—Negation in Traditional and Modern Logic	82
MARSHALL, F. H. A.—The Categories of Biological Science	62
RUSSELL, L. J.—The Basis of Bosanquet's Logic	472

CRITICAL NOTICES.

BERGSON, H.—*L'Energie Spirituelle: Essais et Conferences* (F. C. S. Schiller)	350
BOSANQUET, B.—*Implication and Linear Inference* (C. D. Broad)	323

PAGE

FREUD, SIGMUND.—*Totem and Taboo: Resemblances between the Psychic Lives of Savages and Neurotics* (W. McDougall) - - 344
HOBHOUSE, L. T.—*The Metaphysical Theory of the State* (A. E. Taylor) 91
WEBB, C. C. J.—*God and Personality. Divine Personality and Human Life.* University of Aberdeen Gifford Lectures, 1918-19 (G. Galloway) - - - - - - - - - - - - - - 478
WHITEHEAD, A. N.—*The Principles of Natural Knowledge* (C. D. Broad) 216

NEW BOOKS.

ALIOTTA, A.—*La guerra eterna e il dramma dell' esistenza* (A. E. T.) - 370
Aristotelian Society, Supplementary, Volume II.: Problems of Science and Philosophy. Papers read at Joint Session of the Aristotelian Society, the British Psychological Society, and the Mind Association, July, 1919 (C. D. Broad) - - - - - - - - - 232
BABBITT I.—*Rousseau and Romanticism* (B. Bosanquet) - - - - 242
CARROLL, R. S.—*The Mystery of Nervousness Based upon Self Re-Education* (W. L. M.) - - - - - - - - - - - 366
CASTELLANO, G.—*Introduzione allo studio delle opere di Benedetto Croce. Note Bibliografiche e Critiche* (H. W. Carr) - - - - - - 248
DECOSTER, P.—*La Réforme de la Conscience* (L. J. Russell) - - 244
EFROS, I. I.—*The Problem of Space in Jewish Mediæval Philosophy* (C. T. H. Walker) - - - - - - - - - - - - 240
FLOURNOY, T.—*Métaphysique et Psychologie* (with Preface by Harald Höffding) (F. C. S. S.) - - - - - - - - - - - 112
GALLOWAY, G.—*The Idea of Immortality: its Development and Value* (H. Rashdall) - - - - - - - - - - - - - 354
GENTILE, G.—*Sommario di Pedagogia come Scienza Filosofica* (B. Bosanquet) - - - - - - - - - - - - - - 367
GENTILE, G.—*La Riforma della Dialettica Hegeliana* (B. Bosanquet) 367
HEGEL, G. W. F.—*The Philosophy of Fine Art*, trans. by F. T. B. Osmaston (B. Bosanquet) - - - - - - - - - - 363
HETHERINGTON, H. T. W. (and J. H. MUIRHEAD).—*Social Purpose* (C. C. J. W.) . - - - - - - - - - - - 110
HÖFFDING, HARALD.—(See Flournoy, T.) - - - - - - - 112
HOOPER, C. E.—*Common Sense and the Rudiments of Philosophy* (L. J. Russell) - - - - - - - - - - - - - - 487
HUNTER, W. S.—*General Psychology* (J. Drever) - - - - - 360
JOAD, C. E. M.—*Essays in Common-sense Philosophy* (L. J. Russell) - 106
KAPLOUN, A.—*Psychologie Générale. Tirée de l'Étude du Rêve* (L. J. Russell) - - - - - - - - - - - - - - 484
KEYSERLING, COUNT H.—*Das Reisetagebuch eines Philosophen* (F. C. S. Schiller) - - - - - - - - - - - - - - 246
LAY, W.—*The Child's Unconscious Mind* (B. Edgell) - - - - 486
LODGE, R. C.—*An Introduction to Modern Logic* (B. Bosanquet) - - 362
MARCHESINI, G.—*Lo Spirito Evangelico di Roberto Ardigò* (A. E. Taylor) 248
MERCER, E.—*Why do we Die? An Essay in Thanatology* (G. G.) - 365
MERZ, J. T.—*A Fragment on the Human Mind* (A. E. Taylor) - - 357
MUIRHEAD, J. H.—(See Hetherington, H. T. W.) - - - - - 110
OSMASTON, F. T. B.—(See Hegel, G. W. F.) - - - - - - 363
PIKLER, J.—*Sinnesphysiologische Untersuchungen* (H. J. Watt) - - 490
,, ,,—*Schriften zur Anpassungstheorie des Empfindungsvorganges* (H. J. Watt) - - - - - - - - - - - - 490
PITT-RIVERS, G.—*Conscience and Fanaticism:* an Essay on Moral Values (G. G.) - - - - - - - - - - - - - - 243
POWELL, W.—*The Infinite Attributes of God* (G. G.) - - - - - 365
SHANNON, A.—*Morning Knowledge: The Story of the New Inquisition* (B. Bosanquet) - - - - - - - - - - - - - 367

PAGE

SIDGWICK, HENRY.—*National and International Right and Wrong* (A. E. T.) - - - - - - - - - - - 108
SMITH, J. A.—*The Philosophy of Giovanni Gentile* (B. Bosanquet) - 367
SOLOVYOF, V.—*The Justification of the Good; an Essay on Moral Philosophy* (A. E. Taylor) - - - - - - - - - 238
STEIN, L.—*Philosophical Currents of the Present Day* (F. C. S. Schiller) 244
STODDART, W. H. B.—*Mind and its Disorders.* Text-book for Students and Practitioners of Medicine (W. L. M.) - - - - - - 366
STRATTON, G. M.—*Theophrastus and the Greek Physiological Psychology before Aristotle* (W. D. Ross) - - - - - - - - 235
VIVANTE, L.—*Principi di Etica* (B. Bosanquet) - - - - - - 367
WALSHE, T. J.—*The Principles of Christian Apologetics* (A. E. T.) - 112
WARREN, H. C.—*Human Psychology* (F. C. Bartlett) - - - - - 487
WATT, HENRY J.—*The Foundations of Music* - - - - - - 364
WOHLGEMUTH, A.—*Pleasure-Unpleasure: an Experimental Investigation of the Feeling-elements* (J. Drever) - - - - - - - - 359
ZIEHEN, TH.—*Lehrbuch der Logik auf positivistischer Grundlage mit Berücksichtigung der Geschichte der Logik* - - - - - - 488

PHILOSOPHICAL PERIODICALS.

American Journal of Psychology (vol. xxx., No. 1—No. 4) - - 116
Archiv für die Gesammte Psychologie (Bd. xxxv., Heft 2—Bd. xxxviii., Heft 4) - - - - - - - - - - - - 378, 504
Archives de Psychologie (tome xvii., No. 2—No. 4) - - - 252, 498
British Journal of Psychology (vol. ix., Parts 2-4) - - - 378, 494
Journal of Philosophy, Psychology, and Scientific Method (vol. xvi., 15—xvii., 8) - - - - - - - - - - 118, 375, 495
Philosophical Review (vol. xxviii., No. 5) - - - - - - 251, 375
Psychological Review (vol. xxvi., No. 2) - - - - - - 115, 251
Revue de Métaphysique et de Morale (Mai.-Juin., 1919—Janvier-Mars., 1920) - - - - - - - - - - - - 120, 496
Revue Néo-Scolastique de Philosophie (No. 84, November, 1914-1919) - - - - - - - - - - - - - - 497
"*Scientia*" (*Rivista di Scienza*) (Series II., vol. xxvi., Oct., 1919) 254
Zeitschrift für Psychologie (Bd. lxxv., Heft 1-6; lxxvii., Heft 3-6; lxxviii., Heft 1-6; lxxx., Heft 4; lxxxi., Heft 4; lxxxii., Heft 1-6; lxxxiii., Heft 1-6) - - - - - - - 121, 253, 500

NOTES.

CARR, H. W.—What does Bergson Mean by Pure Perception? - - 123
CONGRESS OF PHILOSOPHY - - - - - - - - - - - 383
MIND ASSOCIATION: Full List of Officers and Members - - - 124
MIND ASSOCIATION: Notice of Meeting - - - - - - - 383
TITCHENER, E. B.—Prize in Psychophysics - - - - - 256

New Series. No. 113.] [January, 1920.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—THE CONCEPT OF MIND-ENERGY.

By H. Wildon Carr.

The new book of Bergson entitled *Mind-Energy*, although a collection of Essays and Lectures, all of which have previously appeared in philosophical journals, is likely in one respect at least to rank among his most important works. It not only propounds to the student of philosophy a new concept of reality, a concept which identifies it with life and mind in the place of the old concept of something (it might be material or it might be spiritual) on which life and mind depend, and by which they are conditioned, but also it indicates as the corollary of that new concept a working principle of the highest scientific importance. In one of the studies in particular, it offers us an actual practical illustration of the application of this principle. I refer to the remarkable essay, which is really a scientific research on "Memory of the Present and False Recognition".

We are accustomed to think of psychology as the latest comer into the circle of the exact sciences, but there has arisen among us a new psychology of which the new psychologists of a very few years ago hardly dreamed, a science of unconscious mind. It threatens a complete revolution in our ordinary concepts of the mind and an entirely new basis for the science of it. I do not claim for Bergson that he is the discoverer or the pioneer of this science, but he was one of the first to feel the direction of the new science and to indicate the method of pursuing it, and his philosophical concept and principle are completely vindicated in its success.

In claiming for Bergson the discovery of a new concept I do not mean that the concept is new in the sense that it is

not to be found implicitly in his historical predecessors or generally in contemporary philosophy. I do mean that in his philosophy a concept of reality has found expression which completely alters the standpoint and direction of philosophical research and holds out the promise of a vast extension of knowledge, an extension into a domain which physical science has so far never attempted to conquer. In a word it opens the prospect of psychical science. The new concept is that life is identical with reality and that consciousness is identical with life. Now the great problem of the past has been to define the nature of consciousness, explain its genesis, and determine its relation to the external reality which conditions it. If we accept the new concept the problem of the future is to explain the nature and genesis of unconsciousness.

Let me illustrate what I mean by referring to what will probably be allowed to be the most original application of the concept—the theory of Creative Evolution. According to the generally accepted biological hypothesis, life appeared on our planet at first in an extremely simple and lowly form (whether it was a direct consequence of the growing complexity of molecular structure in certain forms of inert matter, or whether it was introduced entirely from without, is in the present state of our science uncertain). Once installed it has gone on producing new forms, each responding to the conditions of the environment by some special adaptation. Its highest achievement is the human brain with its accompaniment of self-conscious mind. There need be no dispute about facts. If we could be satisfied with description there would be no more to be said. The problem however which baffles the naturalist at every stage is to explain the driving force of evolution, to discover in the old, and therefore simpler, forms the efficient cause of new and highly specialised forms. The theories of natural selection, survival of the fittest, transmission by heredity of acquired characteristics, are helpful and valuable in their way, but entirely useless to throw light on the problem. Why is there growing complexity? Why does complexity of structure entail higher function? How from the simple can come the complex and from the less the more? Compare now the theory of Creative Evolution. According to this theory, life is consciousness by nature and in right. Consciousness is not something more than life, an acquisition or addition to it. Let us leave out of account, as not affecting this question, Bergson's theory that matter is the inverse of life, in order to see his application of the concept of life to the biological problem as ordinarily understood. We have then as in the boilogical theory of evolution a first appearance of life on the

planet in a lowly form. Life in Bergson's view has humbled itself in order to insert itself. By what means has life, which is consciousness in right, achieved this lowly form which the initial effort required? By clothing itself, as it were, with unconsciousness, that is, by contriving artifices and mechanisms which inhibit consciousness. Of course this is expressed in anthropomorphic terms,—how else can we express any meaning? Once seize the concept, however, and we find we are possessed of a principle which really works. We can explain the evolution of life, or at least we can study its process and its progress, without the dissatisfaction which haunts us when we are conscious of a suppressed paradox and direct logical contradiction. According to the new concept, when some new form of activity is called for, requiring for its attainment some new mode of consciousness, the life impulsion has not to devise for its outlet some new construction of a definitely shaped matter, which in some mysterious way will acquire, by the new combination alone, some new function, a function distinct from anything implicit in the elements themselves,—all it has to do is to remove a shutter, alter or adapt a mechanism, admit to consciousness some part of life previously excluded, make the new form of activity unconscious of everything which might distract it from the new purpose. Evolution can proceed thus because consciousness and life are universal reality, an activity within which and of which we are centres formed to effect actions; because reality is not a static, inert sphere of activity, independent of us and limiting us; because in consciousness we are not aware of something opposed to us and independent; because, in short, mind is energy not stuff. It is our restriction to definitely formed actions which gives to nature its objective aspect.

From this concept of mind-energy there follows naturally a new concept of knowledge, and with it the problem of knowledge, as it has been presented throughout the controversy between realist and idealist, is completely transformed. It is clear that if we conceive life itself as reality, consciousness as identical with life, and unconsciousness as the positive means by which life brings about its concentration in individual acting centres, then discernment of an independent reality is meaningless, and the faculty of knowing cannot be a faculty of contemplating and discriminating alien existence. The problem of how we come to know an independent objective world of nature, and the sceptical dilemma in regard to it, disappear. A new but entirely different problem arises, and at least this new problem is not foredoomed to sterility

by the very terms in which it has to be stated. The new problem is to discover how and why the enduring, unceasingly acting, reality, life, is focussed in individual centres, and by what means and for what purpose the aspect of a reality essentially fluent is made to appear that of a static, immobile, alien, opposing reality. It hardly needs pointing out to anyone familiar with the direction of recent physics that this problem is not purely metaphysical; it has an important and intimate relation to physical science. I think the best way in which I can present this new concept and new working principle is by taking as the illustrative example of it Bergson's theory of perception and memory as expounded in his *Matière et Mémoire*.

The perception of objects is, according to this theory, a selection of images,—a selection effected by shutting out in unconscious oblivion the whole of reality unconcerned with the living actions we are performing, or rather with the kind of influence we exercise. The outline and boundaries of objects,—the things we perceive,—demarcate lines along which our present progressing action is forming. The selected images accordingly outline a certain eventuality of action. Selection of images does not mean that there is an act of the mind, such as some philosophers name the act of perceiving, which out of a variety of images actually present pays attention to some and disregards the rest. Neither does the term image mean that there are mental objects representative of real objects. Very different is Bergson's concept. In perceiving we are directly and immediately conscious or aware of reality, the images neither intercept our view nor mediate our view, they are constituted images by the selection, and the selection is determined by the form of our actions, and these by the needs, the range, and the mode of the activity.

This principle of selection interprets memory of the past as well as perception of the present. Memory is awareness of the past as present reality. The reality is past only in the sense that it is accomplished action. It is not past in the sense that it does not now exist. We carry it with us, it is what we are, our very selves, it is determined and also it is determining the form of our progressing coming action. The present loses all meaning if we cut it off from the past, because all reality is history, and history is making itself. The past is wholly existent in the present, it constitutes each individual experience, it constitutes the racial experience, it constitutes the evolution of life. It is with us always, an ever-present spiritual existence. It lies behind us and we

are unconscious of it, because life requires that our attitude be continuously, even strenuously, forward-looking. We are fixed in this attitude of attention to life. Nevertheless this very attention to life and the action it calls for requires the service of the past as well as its impulsion. At every moment of present perception the shutter is drawn aside according to the needs of the situation and then memory-images come to consciousness. They appear framed and with distinct outlines, but their sharpness and discontinuity and individuality are due to selection.

As in the selection of the perceived images, then, so also in the selection of the memory-images, unconsciousness and not consciousness is the active agent and plays the determining role. The reality is always present and we become conscious of it whenever the mechanisms of unconsciousness are relaxed or their working inhibited. The memory-image does not stand for the past or intercept our view of it, it is formed by selection. It is not a special kind of thing preserving the past, stored in the brain, as we might keep the photograph of a friend in a drawer, it is a vision of the past which is sweeping on with us in our present activity, vision made possible by removing a veil.

In the essay on "Memory of the Present and False Recognition," to which I have referred, we have an admirable example of the actual application of this concept and principle to a definite, ultra-scientific, psychological problem. Recognition offers one of the most obstinate problems in epistemology as everyone familiar with the history of theory of knowledge knows. In a sense indeed the whole of theory of knowledge is concentrated in it, and could we propose a really satisfactory solution of the problem of recognition one chapter in the history of philosophy would be closed. Recognition is what gives to present perceptual experience the feeling of familiarity which accompanies it whether it be routine or entirely novel. The feeling admits of varying degree, but were it entirely absent consciousness itself would disappear. Recognition, when we analyse it, seems a complex thing—the association of a present fact with a present idea of past fact. The association is not arbitrary as in constructive imagination but appears as dependent on some actual relation between the present fact and the past fact ideally present. The laws of the association of ideas have therefore occupied philosophers from the beginning of philosophy. They are supposed to rest fundamentally on the objective fact that there is resemblance between past sense experience and present sense experience, and on the subjective

fact that memory of past experience is retained in consciousness in an ideal form. Recognition therefore is generally regarded as an act of comparison comprehending a judgment so rapid that it enters consciousness as an immediate association. But what is common to every theory of association is the distinction between perception, which is fact, and memory, which is idea. We have, that is to say, perception of the present and memory of the past, and the opposite notions, perception of the past and memory of the present are a paradox. Both these paradoxical notions are declared by Bergson to be fact, and they are paradoxical only because we fail to understand what the past and the present are. But Bergson is not content to expose logical fallacies or to play with dialectic. Construction which is purely metaphysical is, he says, "usually a fragile thing" (*Mind-Energy*, p. 58). He is never satisfied with any theory unless he can bring to its elucidation some concrete fact of living experience. This is what he attempts to do in the essay to which I am referring.

The false recognition which is analysed is not a mistaken resemblance but a distinct phenomenon which has been described and verified and carefully recorded by psychologists, many of them medical practitioners. It is an abnormal phenomenon of mental pathology, in its very severe form it may be a symptom of on-coming insanity. The recorded cases, with full references, are given in the beginning of the essay. They are exhaustive up to the time when the essay was written, though doubtless there are many since. It is not an uncommon phenomenon, neither is it necessarily symptomatic. Many people can testify to having at some time experienced, generally very briefly and under exceptional conditions, something closely analogous. The phenomenon is that the patient seems to himself to be remembering what he is actually perceiving, so that he is bewildered with the feeling that he is going through what he has already gone through, that his present experience has nothing new in it, he knows it already. He feels that he has seen what he is seeing and not that he is seeing what he has formerly seen. He has memory of the present instead of the normal memory of the past. If Bergson had had no theory, if the ordinary concepts of perception and memory and the ordinary concept of reality on which they are based had not been suspect, he would probably have seen no more in this phenomenon than a more or less curious instance of a strange delusion. In the light of his new concept it became at once significant. Suppose our knowledge and its modes have been brought into being

by the needs of our activity, fashioned by the evolution of contrivances and mechanisms which canalise the impulse of life, then it will be in cases of derangement or miscarriage, where the mechanisms are out of gear, where the contrivances are breaking down, that we shall expect to find the significant facts which may give us a glimpse of their real purpose. It is here we must search and here we may find the opportunity at least to test our theory.

The argument of the essay is careful and long and I do not propose to follow it or to criticise it. Indeed in order to do that to any purpose one would have oneself to test cases. Its value to me is illustrative. If the new concept be true then the phenomenon is one which exactly accords with it. If the past exists in the ordinary and absolute meaning of the word; if we can say, "There it is" in the non-spatial meaning of the adverb; if our history or duration be one continuous living action making itself; and if at each moment of the progressing action something is being added to a past which is carried along in the action and belongs integrally to it; then it is clear that at each moment of living experience the memory-form as well as the perception-form of reality is being created by the mind. Now suppose that the normal attitude of the mind is to be straining forward, to be anticipating, and that this attitude is kept constant by means of a mental mechanism which automatically throws the past into oblivion, which brings about a continuous forgetting—a forgetting never absolute, for that would defeat the end, but delicately adjusted as an instrument of selection; then should we not expect that a first consequence of mental derangement or aberration would be a confusion of memory and perception? In Bergson's view we actually find this in the phenomenon of false-recognition. The enfeeblement affects the attention to life and the first result is that the power of throwing the past into oblivion as it is created, or, to put it in objective form, the power of the progressing action to fall back and out of view, is deranged, the patient loses the sharp distinction between past and present, or even experiences the present as past.

The particular application of course may or may not be true. Even Bergson himself would claim for it no more than an approximation. What I am concerned to emphasise is the richness of the new concept and the utilisability of the new principle. First, then, let us see what is the fact in experience to which Bergson appeals as the ground of the new concept of reality. It is memory—not theory of memory, but the obstinate fact of existence which memory compels us to recognise. This fact of experience obliges us to substitute

duration for extension as the substance of things. Duration is fundamentally psychical. Only what is psychical endures. Translate duration into physical terms and it becomes transformed into time, into something which is not duration but a different thing, succession. Time in the sense of succession is a dimension spatially conceived, *i.e.*, it is not duration but extension. Extension is not absolute, it is purely relative to tension. Duration is absolute, it is the actuality of activity. It includes and conditions activity. Duration means that the past is present; that it is not non-existence; that it is not only present in the attenuated shape of more or less dim traces or recollections of what has been, but actually present as the very substance of activity, continued in and determining the forming action. It is the fact of memory which reveals the utter insufficiency of the old concept of a static reality. The concept of physical reality, of a matter occupying space and changing its relative position by the succession of its states in time is essentially discrete. Space and time as principles of continuity are external imposed conditions. In consciousness alone have we the pure fact of duration, and memory is a fact of consciousness. If the universe endures, it must mean that it is not an aggregate of discrete momentary existences, but that it lives; that its reality is not matter but history.

The old concept, then, was of a reality on which life and consciousness depend: the new concept is of a reality of which life and consciousness are modes. Modes are not dependent on reality but identical with it. The physical or material universe in the old concept is essentially inert, movement and change being something added to it or imposed upon it, constituting it a system of external relations. In the new concept reality is activity and matter is an aspect or view. The physical aspect of the universe with its appearance of independence is itself a result of the evolution of life. It is correlative to the mode of intellectual activity evolved in human nature. Let us see then how the fact of memory stands in regard to each concept.

According to the mechanistic view the physical universe is completely determined by the compensated actions and reactions which constitute it a system. This is expressed in the law of the conservation of energy. The present state of the universe is in this concept completely determined by the past, and every future state of the universe is implicit in the present, but only the present state actually exists. The fact of memory, to conform with such a concept, can only be explained by supposing that this material momentary universe retains in its present configuration the traces of its former

configuration, and that there is a mental faculty of using this property to represent ideally the past. The past in this case exists only in idea not in fact. According to the new concept, on the other hand, the past which we remember exists in fact, and in memory we are simply conscious or aware of what is as actual in its own right as the world we perceive. It is not in the existence or non-existence of their objects that memory and perception are different. In memory the acted past, in perception the progressing action, comes to consciousness. This actual existence of which in memory we are conscious is not material or physical but spiritual or psychical. It is psychical existence because in mind alone and not in matter is there true duration, *i.e.*, the existence of the past in the present.

This affirmation of an existence which is immaterial and yet actual is free from the ambiguity of the old idealism, which never succeeded in throwing off subjectivism. "The world is my idea" is a proposition no one can refute, but it carries no conviction simply because there is no passage to objectivity and therefore no basis for physical science. "The world is history making itself" may sound paradoxical to us under the spell of the old concept but it is not ambiguous and it is not self-stultifying. It affirms a reality which is psychical without being subjective. It declares that the substance as well as the efficiency of the objective world of nature is the acted past, existing in, not simply externally continuous with, the present. It is a concept from which scientific advance can be made. It is based on the fact of experience that the past of each individual is ever-present and ready to come to consciousness whenever the artifices which conceal it afford the means.

Such is the new concept of spiritual reality. Instead of matter and movement conceived as the conditions on which life and consciousness depend, we have history and evolution as the present existence of which definite forms of life and consciousness are modes. In the new concept, however, matter and movement are not nothing and they lose nothing of their claim to be real. What is denied is their claim to independent existence in abstraction from the whole. In the concrete activity, life, they are dispositions whose form is determined by a particular mode of conscious activity, the intellect.

The fact of memory when we grasp its full significance in the new concept transforms completely the problem, baffling from the standpoint of the old concept, of the relation of consciousness and life. I have spoken of them as conjoined —in the new theory they are identical. It is very important

to make this clear because it expresses the philosophical principle directive of a new science, the science of unconscious mind. The argument is that memory, if accepted as fact and not explained away by some theory of imprints or traces, implies that the fundamental reality is continuous not discrete. It is only living activity whose essential nature is continuity. When, then, life is conceived as itself the fundamental reality and not as something superposed on inert matter, unconsciousness ceases to be a pure negation, the simple absence which serves to distinguish the inert from the living. Unconsciousness and consciousness become strictly relative terms, both are modes of the life activity and it is unconsciousness which plays the active, consciousness which plays the passive, role. Thus, for example, when we fall asleep, unconsciousness is not the absence of consciousness in the sense of a break of continuity of consciousness, it is the cessation of a mode of activity. When we awake, consciousness does not return as an effort to revivify past impressions, it is simply the resumption of the activity which unconsciousness had suspended. Life is not an activity which may or may not acquire consciousness, it is identical with it. Unconsciousness represents its mode of concentration, or contraction, or tension, a mode necessary for its efficiency in action.

Let us now consider the working principle which this new concept puts in our hands. The key-note is the identity of life and consciousness. Unconsciousness even when it appears to be complete as in the plant is a positive acquirement. By means of it life, which is consciousness in its essence, canalises its activity. The most forcible illustration of the theory is the human intellect. The intellect is not an endowment which enables us to discriminate the nature of reality and discover truth, it is a mode by which the life impulse, working in us, narrows and restricts us to the particular aspect of reality which favours our activity. It gives the distinctively human form to human actions. Matter is the aspect it presents. Matter is an arrest of change or movement. This arrest is purely relative to our actions and it is the intellect which accomplishes it. The mode of its working is selection and the means of selection are contrivances to secure unconsciousness.

It is hardly necessary to point the conclusion. If the promise of a vast extension of knowledge in that new domain which we seem to have discovered by one of the same kind of accidents as those by which all the great discoveries in physical science have been made, the domain we now call unconscious mind, it is by this new working principle it will be realised. It is the true method of psychical science.

II.—THE RELATION BETWEEN INDUCTION AND PROBABILITY—(Part II.).

By C. D. Broad.

1.

In the first part of this paper, in Mind, No. 108, I tried to show that the statement of inductive arguments in terms of probability is a necessary but not a sufficient condition of their validity. We saw that the laws of probability and the ordinary assumptions about equiprobability will not suffice to justify a strong belief in any law or even in a prediction for a few steps ahead. Some additional proposition about nature and not merely about probability seemed to be needed if induction were to be anything more than a guessing game in which we have so far had surprising luck. In this second part I propose to try and find what propositions are needed and what kind of evidence there is for them.

2.

The usual view of the logic books seems to be that inductive arguments are really syllogisms with propositions summing up the relevant observations as minors, and a common major consisting of some universal proposition about nature. If this were true it ought to be easy enough to find the missing major, and the singular obscurity in which it is enshrouded would be quite inexplicable. It is reverently referred to by inductive logicians as the Uniformity of Nature; but, as it is either never stated at all or stated in such terms that it could not possibly do what is required of it, it appears to be the inductive equivalent of Mrs. Gamp's mysterious friend, and might be more appropriately termed Major Harris.

It is in fact easy to prove that this whole way of looking at inductive arguments is mistaken. On this view they are all syllogisms with a common major. Now their minors are propositions summing up the relevant observations. If the observations have been carefully made the minors are practically certain. Hence, if this theory were true, the conclusions

of all inductive arguments in which the observations were equally carefully made would be equally probable. For what could vary their probabilities? Not the major, which is common to all of them. Not the minors, which, by hypothesis, are equally certain. Not the mode of reasoning, which is syllogistic in each case. But the result is preposterous, and is enough to refute the theory which leads to it.

Though we have thus cleared the ground of a false view its falsity leaves us with a much harder task than we should have had if it were true. For it is now by no means obvious in what direction to look for the missing premise about nature. Two courses seem open to us. (i) We might consider just where induction breaks down if it does not assume any premise about nature. We might then try to think of one or more propositions which would suffice to remove the difficulty. Lastly we might try to pare these down to their irreducible minimum and see whether they be self-evident or have any good evidence for or against them. (ii) But it will evidently be wise to use another method as a clue. We regard some inductive conclusions as fairly trustworthy and others as much less so. It will be wise to consider what assumptions or knowledge we have at the back of our minds when we make inductions. These may be betrayed by comparing the cases where we are satisfied with the induction with those where we are not. We can then state these assumptions explicitly; see whether they do suffice to make some inductions fairly probable; and consider the evidence for or against these assumptions. It seems reasonable to hope that the first method will suggest to us the *kind* of propositions about nature that are wanted, and that the second will suggest the actual propositions which people use when they make inductions. And we may hope that the latter will be instances of the former.

3.

Induction by simple enumeration has so far been wrecked on two different reefs. (1) The number of S's examined could only bear a vanishingly small proportion to all the S's in the world, even if any one S were as likely to have fallen under our notice as any other. The result was that the number of antecedently equiprobable hypotheses about the proportion of S's which are P is enormous, and therefore the antecedent probability of the only pair which would be laws, *viz.*, All S is P and No S is P—is vanishingly small. (2) It is certain that not every S is equally likely to have fallen into the class

of observed S's; for those which begin to exist after the experiment is concluded or exist in places remote from all the experimenters could not possibly have fallen into this class. It is pretty clear what *kind* of proposition is needed to diminish the first difficulty. We want some proposition which favours *laws* (*i.e.*, universal propositions) as against propositions of the form n °/₀ of the S's in nature are P's; so that all S is P or no S is P shall be antecedently much more probable than the innumerable possible alternatives. And I have no doubt that this is what people must have had in mind when they spoke of the Uniformity of Nature and told us that it was a necessary premise of all inductions. But they hardly noticed how extremely difficult it is to state any such proposition in a form in which it is not flagrantly false. The variety of nature is just as marked as its uniformity; and, on the face of it, far more certain, since variety can be directly observed, whilst uniformity, strictly speaking, cannot. It is all very fine to adopt a haughty attitude towards particular propositions and to call them trivial; the fact remains that many such propositions are true, and that it is excessively difficult to state any principle which will favour laws as against particular propositions and not fly in the face of the facts. I can indeed state a principle of uniformity which will be compatable with any amount of variety, but I am far from sure whether it is either true or useful. The principle would be this:—

$$\phi a \,.\, \psi a \,.\, \partial : (\exists \chi) : \chi \neq \psi \,.\, \chi a : \phi x \,.\, \chi x \,.\, \partial_x \,.\, \psi x.$$

This means that if any individual a has the property ϕ and the property ψ [*e.g.*, is a swan and is white] then there is some property χ other than whiteness [*e.g.*, that of being European] which is possessed by a, and such that everything that is both ϕ and χ [*e.g.*, is a European swan] is also ψ [*e.g.*, is white]. The condition $\chi \neq \psi$ is added to avoid triviality, since if χ might be ψ a χ fulfilling the conditions always exists for $\phi x \,.\, \psi x$ analytically implies ψx. Of course χ might be identical with ϕ.

I am inclined to think that this is what those logicians like Prof. Bosanquet who say that all particular propositions are imperfectly apprehended universals have in mind. I am the more inclined to this view because this principle does make all laws simply convertible in a certain sense, and this is another characteristic opinion of the same school of logicians. Suppose that in the above formula we substitute everywhere ψ for ϕ and ϕ for ψ. We get

$$\psi a \,.\, \phi a \,.\, \partial : (\exists \chi) : \chi \neq \phi \,.\, \chi a : \psi x \,.\, \chi x \,.\, \partial_x \,.\, \phi x.$$

Of course the χ will not in general be the same in the two cases; but it does at least follow from the principle that there is always an universal proposition with ψ as subject and ϕ as predicate as well as one with ϕ as subject and ψ as predicate. And I can hardly suppose that these logicians intend to maintain much more than this.

Another principle, which many people seem to believe, can be deduced from the above. Many people would say that, if you find that some swans are white and that some are not, this is never the whole truth about the matter; all the white swans must have something common, and peculiar to them which 'accounts for' their whiteness.

A little simple logical manipulation leads to the proposition:

$$\phi a \,.\, \phi b \,.\, \psi a \,.\, \backsim \psi b \;\partial : (\exists \chi, \theta) : \chi a \,.\, \theta b \,.\, \chi \doteqdot \psi \,.\, \theta \doteqdot \bar{\psi} : \phi x \,.\, \chi x \,.\, \partial_x \,.\, \backsim \theta x.$$

e.g., If a and b are swans and a is white and b is not then there is another property χ possessed by a and a property θ possessed by b such that no swan with the property χ has the property θ.

4.

Now the proposed principle, which we will call *Unax* for short, must be admitted to have certain merits. If Unax were true the problem of induction would be shifted and lightened. Without it we do not know whether there is any law connecting S with P; we are therefore liable to go wrong in two ways: (*a*) by thinking that there is a law and that we have discovered it when really there is no law at all, or (*b*) by thinking that the law is All S is P when really it is of some more complex form such as All SQ is P. If Unax be granted the first source of error vanishes. The second, which corresponds to the second difficulty in induction by simple enumeration, remains. But it could certainly be reduced by examining S's under as various conditions as possible. We could never end by being sure that the law took the simple form All S is P, but we might conclude with fair confidence that, *if* it be All SQ is P, the factor Q is pretty abstract and accompanies S under extremely variable conditions, so that for most practical purposes, it is negligible.

Unax also has the merit that it could never be refuted by experience. Whenever you seem to have a conjunction of attributes ϕ and ψ which is not an instance of a general law of the form $\phi x \,.\, \chi x \,.\, \partial_x \,.\, \psi x$ you can always say that this is because the property χ is too minute or obscure to be detected

by our present means of observation. No one could refute this possibility; and, if you believed it, it would furnish a motive for further and more accurate investigations.

This, however, is about all that can be said in favour of Unax. There remains much to be said against it. In fact Unax may be a first approximation to the principle for which we are looking; but it seems quite certain that, as it stands, it is in some ways far too general and in others not general enough, and that it is neither ultimate nor plausible. By developing these criticisms we may find out in what direction to look for more light.

(i) Unax, as stated, makes no difference between ϕ and ψ; they may be any properties or combinations of properties. Now when ϕ is a property like being a swan or a crow and ψ is a property like whiteness or blackness the principle seems plausible enough. But suppose that ϕ were a property such as being spherical. I hardly imagine that the statement that, if anything is spherical and white, then it possesses some other property χ, such that all spherical objects with the property χ are white, would seem plausible. It therefore looks as if ϕ and ψ must not be properties which are wholly unrestricted, and that in fact ϕ must be a property of a very special sort, if the statement is to seem plausible. This is reinforced by the following consideration. We have seen that, if we take Unax without any special hypothesis about ϕ and ψ, *two* laws correspond to every conjunction of attributes. Now many people would hold that if a swan is white there must be some property χ possessed by this swan such that all swans with this property are white. But how many people would hold that if a white object is a swan there is some property χ, other than that of being a swan, which is possessed by this white object and is such that all white objects with the property χ are swans? Yet this, as we have seen, equally follows from Unax, if ϕ and ψ are supposed to be subject to no special hypothesis in it.

(ii) For Unax a *single* conjunction of attributes is enough to make it certain that this conjunction is an instance of *some* general law. Nor is it easy to see how this could be otherwise, for the influence of *number* of instances seems to have been exerted in the only way in which it can be relevant, *viz.*, through the laws of probability, before ever Unax was invoked. I hardly see how any principle about nature which is to do the work required of it can refer to the number of observed instances. If it is about nature it is about what exists whether we observe or not, whilst the number of instances observed is at least partly dependent on our own actions.

Yet many people who would agree that a good number of observed conjunctions of ϕ and ψ make it certain that ϕ and ψ are connected by a law would hesitate to say that a single such conjunction makes it even highly probable. It is important to be quite clear as to the precise nature of the difficulty here. (*a*) Nobody supposes that, with Unax or without, a single instance of ϕ conjoined with ψ makes the particular law that ϕ is always accompanied by ψ probable. But (*b*) Unax does say that a single instance makes it absolutely certain that there is *some* general law connecting ϕ with ψ. Now most people would be inclined to hold (*c*) that a fair number of instances of conjunction are needed to make even this probable, though a fair number will make it practically certain. Now their view is not supported at all by the probability-theory of induction *without* Unax; whilst, if they accept Unax as offered, their view is unintelligibly timid. Hence it must be supposed that they accept some principle about nature which is less sweeping than Unax; yet it is very difficult to see what principle about *nature* there could be which makes *number of observed conjunctions* relevant at just this point.

5.

I am inclined to think that both these difficulties (i) and (ii) are to be met by the same modification. When do inductions by simple enumeration seem to be highly plausible and when not? They seem plausible when we are dealing with substances which are believed to belong to what Mill would call a Natural Kind. We believe pretty strongly in the results of such inductions when they deal with the properties of such things as crows or swans or pieces of silver. But no one attaches much weight to inductions about the colour of billiard balls or counters in a bag. If Unax is to be rendered plausible it must be subject to the restricting hypothesis that ϕ is a property or set of properties defining a kind. If this be granted we see why common sense will not allow the reversibility which Unax permits when ϕ and ψ are unrestricted. Unax now takes the form:—

$$\phi \epsilon \mathrm{K} \,.\, \phi a \,.\, \psi a \,.\, \partial_{\chi} : (\exists \chi) : \chi \neq \psi \,.\, \chi a : \phi x \,.\, \chi x \,.\, \partial_x \,.\, \psi x.$$

This we will call *Unaxk*. Now Unaxk says nothing about ψ defining a kind; hence, on substituting ψ for ϕ and ϕ for ψ, we get nothing startling, but merely a proposition with an hypothesis $\psi \epsilon \mathrm{K}$ which is in general false.

We can also see now why common sense wants a number of observed instances before it will consent to be sure that there is *some* law connecting ϕ with ψ. It wants these instances in order to persuade it of the truth of the hypothesis that ϕ defines a kind.

It can only feel sure of this when it has met with a fair number of instances of ϕ and found that they have a great number of properties beside ϕ common and peculiar to them.

Finally (iii) we can now admit that Unax is not ultimate, and can see why. Unax is only plausible in the modified form of Unaxk. Unaxk refers essentially to kinds, and we have not as yet analysed what is meant by kinds and what is involved in the assumption that there are kinds in nature. Any further progress in solving our problem will therefore depend on a careful discussion of this subject. We must therefore bid Unaxk a long farewell for the present and turn our attention to the assumption that there are natural kinds.

6.

Even without entering at all deeply into the question of kinds we can see in a general way how the assumption of kinds affects the problem of induction about the properties of substances. Such inductions seem most plausible when the subject is a well-marked class like swans or crows and the predicate some fairly general and simple property like blackness or whiteness. Now the mere fact that ordinary language has taken the trouble to invent a general name like *swan* or *crow* tells us a good deal about nature. It implies that a large number of objects have been met with which have combined pretty constantly a large number of properties varying only within fairly narrow limits. It is true that you may *define* a crow or a swan or a man by a few properties. But this very fact is symptomatic. Whatever may be the dictionary meaning of 'man' *we* always mean by it something with a great many more properties than animality and rationality or two-leggedness and featherlessness. Anything that had these properties but differed widely in other respects from the men that we had met would only with great hesitation be called a man. Hence the fact that we are content with the dictionary definition is due to the fact that so far in our experience the properties mentioned therein have been associated with a whole bunch of other properties, and that all these have been exemplified together with but slight variations in a great number of instances. Thus when we ask ourselves the question: Are all S's also P? and suggest the possibility that

some may not be P we imply that P is only one of a large number of attributes, and we imply that a slight variation in P is consistent with the bulk of the remaining attributes being unchanged. For with any large change, we should cease to go on calling the object *an S*, and thus, even if this object turned out not to be a P, this would not be relevant to the question whether all S's are P; for this object would not be counted as an S.

So the actual state of affairs in any induction about substances to which we should be inclined to attach much weight is this: (*a*) A large number of individuals have been observed all of which had a large number of attributes in common and only differed by small variations of these attributes within narrow and characteristic limits. Scarcely any individuals have been observed which agreed with the former in a great many respects, but otherwise differed profoundly from them. And if such have been observed and have been numerous they count as a different kind and have a different name, so that no question arises of treating them along with the former individuals in making our induction. (*b*) The attribute P has been found to be present in all these individuals. This attribute is not of such importance that a change in it alone would prevent an object otherwise agreeing with other S's from being called by the name *S*. (*c*) If there be other individuals which agree so far with those already observed as to be appropriately called by the same general name *S* as they, how probable is it that they will also agree in having the attribute P?

The superior plausibility of inductions about kinds is thus partly a matter of words; but, like most matters of words, it rests ultimately on a matter of fact. The purely verbal point is that, unless the unobserved objects resemble the observed S's in the vast majority of their attributes they will not be called *S's*, and the question whether they be P or not will be irrelevant to the question whether all S's are P. The factual basis of all this is that a large number of very similar individuals have been observed; if they had not been numerous and had not exemplified an outstanding bunch of attributes men would not have troubled to give them the special name *S*. Thus, in any actual induction, the evidence is never merely the *number* of examined instances, but also the predominant agreement of all these instances with each other and the presupposition that the doubtful and unexamined cases must predominantly agree with the examined ones in order to count as relevant instances for or against the suggested law.

We might put the argument in the following way. The objections to induction by simple enumeration about the properties of substances are unfair to that process in the only case where anyone attaches much weight to it. They are unfair for two reasons: (*a*) They do not state the problem properly; and (*b*) they do not consider the whole of the evidence. Let us consider these points.

(*a*) It is unfair to put the problem in the following form: 'All the observed S's are P. There are innumerable unobserved S's. What is the probability on your observation that all these are P?' For what is the evidence that there are innumerable unobserved S's? Surely it is of just the same kind as the alleged evidence that the unobserved S's are P. You have observed a large number of S's; they were all P. If the observation of a large number of observed S's be a good ground for thinking that there are innumerable unobserved S's it would seem to be an equally good ground for thinking that there are innumerable SP's; for all the observed S's were in fact SP's. I do not at present wish to assert that we have good evidence for *either* conclusion; but it is obviously unfair to talk as if we were certain of the former and to make this a ground for feeling doubtful about the latter. It does seem likely that anything that is evidence for the one will be in its degree evidence for the other. We might put the matter thus. Either your evidence makes it highly probable that there are unexamined S's or not. If so, it is difficult to see what evidence could make it highly probable that there are unexamined S's and leave it highly improbable that they are SP's, when all the examined S's were SP's. If, on the other hand, there is no strong reason to believe that there are many unexamined S's, there is no strong reason for putting the probability that all S's are P very low, for there is no good reason to think that m is very small as compared with n in the fraction $\frac{m+1}{n+1}$. (It must be understood that at present I am only using general arguments, which must be taken as *illustrating* the way in which the assumption of kinds might affect the theory of induction, and not as *proving* anything conclusively. We shall have to consider the whole question in much greater detail when we have learnt more about kinds.)

(*b*) To consider only the number of the observed S's is to neglect part of the evidence. We have also to remember that to be called an S at all an unobserved object has to resemble in most of its properties those objects which were observed and were P. Hence an argument by simple

enumeration is always also an argument by analogy, and, *ex hypothesi*, the analogy is very strong or the unobserved case does not count as an instance for or against the law about S's.

7.

We see then that any actual induction about the properties of substances involves at least two presuppositions beside the numerical and other data of the argument, *viz.* (*a*) that we are dealing with *substances* and (*b*) that there are *natural kinds* of substances. Anything that is involved in these two assumptions may therefore fairly be regarded as part of the actual premises or principles of such inductions. We must therefore see what these two assumptions really do amount to, and afterwards what evidence there is for them. We shall find that, as regards evidence, (*a*) and (*b*) are entangled with each other and with induction by simple enumeration in a highly complicated way. But we must begin by treating them separately.

(*a*) *The Assumption of Substances.*—When we call a swan a substance we imply that it is something that persists at least for a time; is distinguishable from other swans and from other things which coexist with it; and that, in spite of changes, we can in theory at least identify it as it is at one moment with itself as it was at other moments. A persistent, changeable, and yet identifiable substance is always *at least* a series of states having certain relations to each other and certain properties common to them all. It may be something more than this, but I do not think that it need be so. By a state of a thing I mean a momentary particular which is one of the whole series of related particulars constituting the thing. A state is thus a 'substance' in the logical sense of being a particular and not a universal, though not in the physical sense which involves persistence and identity through change. When I call these states 'momentary' I do not wish to tie myself down either to the view that they have no duration or to the other view that each lasts for a very short time, characteristic perhaps of the series in which they occur. For our present purpose the difference is not of much importance. When I say that θ is a state of the substance Θ I therefore mean that θ is a particular which is momentary in a loose sense and is one of a series of momentary particulars θ_1, θ_2 . . . which have the sort of common properties and mutual relations which entitle such a series to be called a substance. (This view is

to be distinguished from the assertion that 'things are *classes* of their states'; it says that things are *complexes* of their states and complexes of a very special kind. To illustrate by an analogy: My face is a complex in which my features are elements; it is not the class of my features.)

To say that Θ persists up to the time t means that there are θ's fulfilling those conditions up to that time. To say that it then ceases to exist means that after then there are no θ's which have the right amount in common or the right kind of relations with those of the series θ_1, θ_2 . . . which existed before t and were the states of Θ. To say that Θ persists but changes at t means that there are θ's which exist after t and have enough similarity to and continuity with those which exist before t to be counted as states of the same thing Θ, but that the last to be observed of the latter and the first to be observed of the former differ from each other in some 'first-order property'. By a 'first-order property' I mean a singular proposition ascribing a 'lowest quality' to a definite particular state, or asserting a 'lowest relation' between two or more definite states. I use the phrases 'lowest quality' and 'lowest relation' by analogy to the phrase *infima species*. I should not call colour, or even red, a lowest quality, but only a perfectly definite shade of red with definite intensity and saturation. In fact a lowest quality is universal in that it can have a plurality of instances; but these instances must be particulars. Similar explanations apply to the phrase 'lowest relation'.

The next point to notice is that all properties of *things* are at least 'second-order properties'. By a 'second-order property' I mean the assertion that a propositional function whose particular values are first-order properties gives true propositions for all, some, or certain values of the variable. Now it is evident that a great many properties of things are assertions about their characteristic ways of behaving. They thus assert how the first-order properties of one state will differ from those of an earlier state under given circumstances. Evidently such assertions are at least second-order properties. But this is equally true about what are called 'permanent properties' of things, though the fact is here less obvious. When you say that this penny retains its mass through all physical and chemical changes you are saying that for all values of θ, such that θ belongs to the series of states Θ constituting this penny, the function 'θ has the mass m' gives a true proposition. The permanence of an attribute is thus only a rather special and peculiar mode of behaviour, and the persistent properties of substances are of at least the

second order just as much as assertions about their characteristic ways of changing.

8.

Doubtless permanence in this sense is the earliest and most striking feature which is chosen as a criterion to judge whether a state belongs to a series constituting a thing. Many series do continue in our experience for long periods with scarcely any serious variation in their first-order properties from one state to another. But even such series, which uneducated common sense regards without hesitation as constituting persistent things, have long gaps as far as our experience is concerned. While our attention is otherwise occupied those series may continue, but we certainly have no direct evidence that they do. How does common sense fill in such gaps? Suppose we are aware of a series of very similar states which we regard as the thing Θ_1; suppose that there is then a gap in our experience and that we then meet with no more states of this kind for a time. Lastly suppose that we again meet with a series which we can regard as a thing Θ_2, and that the states of Θ_2 are as similar to those of Θ_1 as those of Θ_1 are to each other. Under what circumstances do we regard Θ_1 and Θ_2 as the same thing? (*a*) We may find that whenever we choose to adjust our bodies as they were adjusted when we perceived Θ_1 we are aware of a state θ as like those of Θ_1 as the latter are to each other. Under these circumstances we should say that Θ_1 persisted and was the same as Θ_2. (*b*) On the contrary we may of course find that a change of bodily adjustment is needed in order to perceive Θ_2, and that we can only become aware of a θ whenever we choose, provided we suitably alter the adjustment of our bodies. In such cases we tend most strongly to identify Θ_2 with Θ_1 and to hold that Θ_1 has really persisted through the gap in our experience, provided that we find that in order to become aware of θ's intermediate between the end of Θ_1 and the beginning of Θ_2 an intermediate amount of adjustment is needed between that which was required to be aware of the last θ in Θ_1 and that required to be aware of the first θ in Θ_2. The point here then is that you can perceive a θ of the right sort at any point in the gap if you will make the right bodily adjustments, and that the right bodily adjustments for success at various points in the gap from a continuous series between those which are successful at the beginning and those which are successful at the end.

We thus see that an important criterion for the persistence of a thing Θ is the belief that *whenever* we choose to perform certain actions we shall observe a particular θ which is so connected with the θ's that actually are observed as to count as a state of the same thing. Now what evidence can I have for this belief in the case of some definite thing Θ which has ceased to be under my observation for a certain ten minutes? Clearly I cannot know by direct observation of Θ that if I do the right things in the ten minutes' interval I shall perceive a θ which can be taken as a state of *it*. For, by hypothesis, I do not do the right things, and do not become aware of any such states within this interval; this is implied by saying that Θ ceases to be under my observation during that ten minutes. My only evidence (apart from the testimony of others, which is often lacking) is the behaviour of *other* things of the *same kind* as Θ on other occasions. Suppose, *e.g.*, that I observed a certain state θ_1 at the beginning of the ten minutes, and that at the end of it I began to observe a certain state θ_2. By hypothesis I have observed no intermediate states of this particular Θ. But I may have observed other Θ's at other times. I may have observed one of them for two minutes after it reached a state like θ_1, another for five minutes, another for seven, and so on. I may even have observed a Θ for a complete ten minutes after it attained a state like θ_1 and I may have found that it then reached a state like θ_2. Thus my evidence for supposing that at a given moment in an interval during which Θ was not under observation I should have observed a certain state θ_m if I had done certain things is that I or others actually have observed a state like θ_m at a corresponding period in the history of some other Θ which was under observation.)

We thus see that the logical relations between substances, natural kinds, and induction are extremely complex. (i) Obviously the assumption of kinds of substances involves the assumption of substances. But (ii) we should have very little evidence for the persistence of a given substance if it were not for the fact that other substances of the *same kind* are observable when it ceases to be under observation. (iii) Inductions about the properties of substances are not plausible unless those substances are supposed to belong to a natural kind. Yet (iv) the evidence for the persistence of an unobserved substance from that of others of the same kind is itself inductive. (I do not of course suggest for a moment that people actually reach the belief that their table continues to exist when everyone goes out of the room by inductive arguments from the behaviour of observed tables. They do

not *reach* such beliefs by argument at all, any more than they argue to the existence of physical objects from their sense-data or to that of other minds from the behaviour of other bodies. But, if their belief in the persistence of a given substance were challenged, the only grounds that they could offer would be inductive arguments from other substances of the same kind which had remained under observation.

It will now be wise to discuss the assumption of kinds, since we see that it is closely connected with the persistence of substances and it is part of the definition of a substance to be a more or less persistent series of states.

9.

(*b*) *Assumption of Kinds.*—If we consider all the momentary states of all the material things which we have met, we find that, though infinitely various, they ring the changes on a comparatively few variables. States differ from each other in colour, sound, taste, smell, temperature, shape, size, etc. But they agree in being determined by one or more of these variables and by some special values of them. Let us call the various sensible qualities—colour, sound, temperature, 'feel,' smell, taste, etc.—*primary variables*. The above list is practically exhaustive as far as human beings are concerned. I have excluded shape and size from the list for reasons which will appear in a moment. Each of these primary variables has a comparatively small number of *dimensions*, as I will call them. *E.g.*, the dimensions of sound are pitch, loudness, and quality. Dimensions are specifications of a primary variable, having the following properties: (i) In any definite instance one value of each dimension must be specified; (ii) *À priori* and apart from any special causal laws which may be found to hold in this particular world any value of one dimension may coexist with any value of any other dimension of the same primary variable. Lastly each dimension of each primary variable is susceptible of a range of possible values which is sensibly continuous.

The position of spatial properties is unique and peculiar. We cannot treat shape and size as themselves dimensions, for they cut across the primary variables; *e.g.*, a patch of colour and a patch of temperature both have shape and size. On the other hand we cannot treat shape and size as primary variables. For it is of the essence of primary variables to be antecedently independent of each other. There is, *e.g.*, no synthetic, *à priori* proposition asserting that colour must be accompanied by temperature or temperature by 'feel' (in the

sense of hardness or softness), even though some such propositions should be found to be true in the actual world. Now there are *à priori* connexions between spatial attributes and primary variables. All instances of colour and temperature and 'feel' at least have some shape and size. And all instances of shape and size are also instances of *some* primary variable, *e.g.*, colour or temperature or 'feel'. We may say then that as regards any given primary variable extension behaves like a dimension, *i.e.*, it must be specified to determine any particular instance. But, unlike a genuine dimension, it is not tied down to any one primary variable. Finally extension in itself of course has dimensions in the strict sense.

Now any momentary state is completely specified when we are given (*a*) the primary variables, (*b*) the values of each dimension of each variable, and (*c*) the extension of the determinate value of each primary variable. The sum total of all antecedently possible combinations of values of this kind would give all the antecedently possible sorts of states at a moment. Any one of these sorts of states might, so far as we can see, have any number of instances. The only antecedent restriction on the number is that two precisely similar states will not count as distinct if they completely overlap each other in space. Now antecedently there seems no reason why any one of the possible sorts of states should be represented in nature by more instances than any other. We might therefore have reasonably expected to find at any moment the whole multiply-continuous series of possible sorts of states about equally represented in the existent world. But our actual experience of the world has been utterly and flagrantly contrary to this expectation. What we have found is not a regular distribution of all the states at a moment among all the possible sorts of states, but a "bunching together" of instances in the neighbourhood of certain sorts of states. Intermediate possible sorts are scarcely represented in nature, so far as our experience has gone, at all.

Suppose, *e.g.*, that there are N primary variables. Then of course there are ${}^{N}C_{r}$ possible r- fold combinations of them, and the total number of combinations of all orders will be $2^{N} - 1$. Now let us confine our attention to any one of the ${}^{N}C_{r}$ r- fold combinations of primary variables. Each of the r variables will have a finite number of dimensions, and between them they will possess a number of dimensions which may be represented by pr, where p is a positive integer in general greater than 1. Imagine now a pr-dimensional space formed with one dimension of one of the r variables for

each of its axes. Then, setting aside the characteristics of shape and size which, as we have seen, are also needed completely to specify a possible sort of state, we may say that each point in this space represents a possible sort of state defined by this particular selection of r out of the N primary variables. Now suppose that a fluid were distributed throughout this space in such a way that its density at any point represents the number of instances in the world of the sort of state represented by the point. Let us further suppose that the density of the fluid at a point were represented by the blackness of a dot made at that point. Then antecedently to experience we might expect this space to be uniformly shaded. But in actual fact, so far as our experience has gone, we have found a quite different arrangement. We should find a number of blobs in the space surrounding certain points. These blobs would be very dark near their centres and would shade off very quickly in all directions as we moved away from these centres. In the regions between the blobs there would be practically no dots at all, and such as there were would be extremely faint. And lastly the whole set of blobs would be confined within a region defined by moderate values of the variables.

10.

This sort of distribution corresponds to what is meant by natural kinds. A natural kind is a region containing a blob. To drop metaphors, a natural kind of state is a sort which has a predominantly large number of instances in nature and such that the number of instances of neighbouring sorts of states falls away quickly in every direction. The sort which has the maximum number of instances (and in our spatial picture is the mean point and the blackest of a blob) is the *type* of the kind in question. Any particular instance of it or of its adjacent sorts counts as a state of the kind. A kind of substance is, to a first approximation, a series of states all of a kind, and possessed of the sort of continuity and relations which make them one substance. (I say to a first approximation, because, as we shall see later, characteristic modes of change are as typical of kinds of subtances as constancy of kind throughout a series of states.)

The net result then is that, even to a superficial observer, the distribution of states at a given moment is about as far removed as it could be from what is antecedently most probable, and that this mode of distribution shows no sign of becoming more uniform when we take all the moments of human experience together.

Now either this habit of heaping instances round a comparatively few possible states is typical of nature as a whole or it is not. If it is not we have to explain as best we can why it has been characteristic of nature so far as it has come under the notice of human beings. Supposing, for the sake of argument, that nature as a whole really distributes its instances uniformly among possible sorts we shall have to go on to assume that the position of the human race is in some way wildly abnormal so that the parts of nature which have fallen under its observation have been utterly non-tpyical of the whole. What would this assumption amount to?

It might mean either that the human race had been confined to a section of the universe in which the distribution of instances is excessively unlike their distribution over nature as a whole, and that this exaggeration in our part of the universe is corrected by complementary exaggerations in other parts. Or it might mean that, even within the part that has fallen under our observation, the distribution of instances is really pretty uniform, but that limitations in our perceptive powers or in our interests have prevented us from noticing all but the instances of a few possible sorts. In the end both alternatives depend on supposed limitations of our powers of perception. The second explicitly does so. The first, on further consideration, is easily seen to do likewise. The only importance of space and time for the inductive problem is that they impose limitations on what we can directly observe, and hence at the same time provide the motives and limit the data for inductive arguments. I cannot directly observe what is very remote in space or what happened before I was born, nor can I now directly observe anything that is going to happen later unless I chance to be a prophet.

11.

Now the lack of uniformity in the distribution of instances *within* the region to which I have been confined by spatio-temporal limitations certainly cannot be explained wholly by limitations of my interests and powers of perception. No doubt if the values of primary variables be above or below certain limits I cannot observe them. No doubt, too, there may be many variables that cannot fall under my observation because I lack the needful sense-organs. But this will not account for my failing to observe instances of sorts which fall between the sorts of which I do observe instances. The fact that I occasionally do observe instances of these sorts (*viz.*, 'monsters' in an extended sense of the word) shows

that their rarity in my experience cannot be explained by supposing that they are really present in large numbers but are unobservable to me. Again, while it is true that I often slur over minor differences and treat instances as exactly alike when they are only rather similar, it is certainly not true that my interest is only excited by similarity and not by difference. The success of Messrs. Barnum and Bailey shows that it is not mere lack of interest for intermediate sorts that makes us ignore them. If, *e.g.*, pig-faced ladies were not *really* rare within the range of our physically possible experience it would be unintelligible why the few who do turn up should be so much more interesting than ladies of the more usual kind. Thus I think we are forced to conclude that that part of nature which falls within the spatio-temporal limits of possible observation really departs very far from a uniform distribution of instances among possible sorts; and that the appearance of departure from uniformity cannot be explained by limitations of our interests or powers of observation.

12.

The second alternative, that the part of the world that has fallen under human observation really does depart widely from uniform distribution but that this is averaged out by the much wider part that has never been observed, is much harder to treat properly. It evidently assumes that there is an unobservable part of nature and that the sole reason why it is unobservable is because we cannot perceive what is very distant in space or part time or what is future in time. This assumption itself has doubtless many implications, but for the moment we will take it as it stands. We may then represent the whole course of nature as contained in a four-dimensional space with three spatial and one temporal axis. We may regard a human observer as a point surrounded by a four-dimensional solid. This solid represents the spatio-temporal limits of his possible perceptions. The human race within historical times will be represented by a big four-dimensional solid composed of such solids. Of course the solids will not exclude each other wholly; the centres of one or more will often lie within those of another. Thus the solid will be rather like a mass of bubbles made by blowing through a pipe into soapy water. The limits of this solid will be those of possible human observations within the period for which human history has lasted. Now either (*a*) we may neglect the fact that the human race arose from definite causes in a

definite part of the universe, or (*b*) we may take it into consideration. Let us first neglect it.

Then antecedently we can regard this solid representing possible human experience as shot at random into the space representing the whole course of the universe, *i.e.*, we have no ground antecedently for thinking that it is more likely to fall in one part of the course of nature than in any other part of the same shape and duration. The actual content of human experience will be represented by the content of the part of the whole four-dimensional space into which the four-dimensional solid happens to fall. Now if the heaping of individuals about kinds be a peculiarity of a small section of the universe, whilst elsewhere the distribution is nearly uniform, it is highly unlikely that human observers will have happened to fall just into this part of the universe. The larger we suppose the universe to be compared with the part of it which has this peculiarity the less likely it is antecedently that the solid representing the limits of human experience should have fallen totally inside this peculiar region. Really we have three four-dimensional volumes to compare: (*a*) that representing the whole course of nature, (*b*) that of the solid representing the spatio-temporal limits of historical human observation, and (*c*) that of the supposed exceptional region within which a discontinuous distribution of individuals about a few natural kinds is supposed to hold. Unless (*c*) be very small compared with (*a*) we cannot be very far wrong in extending the characteristics of what we have observed to the whole universe. On the other hand if (*c*) be very small compared with (*a*) it is very unlikely that (*b*) when thrown at random into (*a*) should fall wholly inside (*c*). And it is obviously more and more unlikely the nearer (*b*) approaches in volume to (*c*). Now it is only if the general course of nature changes soon after the spatio-temporal limits of our present experience are surpassed that the inductive extension of the general characteristics of what we have observed will soon lead us wrong. That is, such an inductive extension will be *practically* harmless *unless* (*b*) nearly approaches in volume to (*c*); and we have just seen that *if* (*b*) nearly approaches (*c*) the fact that (*b*) has wholly fallen inside (*c*) is an extraordinary coincidence which renders the existence of the supposed exceptional region (*c*) highly improbable.

13.

But it will no doubt be objected at once that all this talk about the human race being 'shot at random' into the

universe like a sack of coals into a cellar is the merest nonsense. It actually did arise at a certain moment in certain parts of space where the right conditions were fulfilled and has gone on ever since. Hence its range of experience cannot be compared to a *movable* solid which might have fallen anywhere in the universe. Now these statements may very well be true—I suppose that we all believe that they are true—but are they relevant? What is a person who makes them assuming? He is assuming that he can write a hypothetical history of the origin of human observers. Now this means that he supposes himself to know (*a*) that certain conditions held before human observation began, and (*b*) that these conditions, operating according to certain laws, were necessary (if not sufficient) for the production and continuance of life and mind as we know them. He thus claims a knowledge of what existed outside the range of human observation and of the laws that it obeys. His only ground for this must be the belief that he is justified in extending the characteristics of the part of the world that has fallen under human observation to parts of it which, by hypothesis, cannot have done so.

The logical position therefore seems to be this. Either we know that the general characteristics of nature which we have observed (confinement of instances to kinds, regularities of behaviour, etc.), are equally characteristic of the parts of nature which we have not observed or not. If so, then it is doubtless nonsense to talk of the human race and its observations being as likely to fall in one part of the total course of nature as in another, and our previous argument will be useless. But then it will also be needless. For anyone who supposes himself to have this knowledge supposes himself to know that the part of nature that has fallen under observation is not peculiar in its general (and even in some of its more special) characteristics. If, on the other hand, we entertain a doubt whether the general characteristics of the observed part of nature hold of the unobserved parts we *ipso facto* leave open the possibility that these unobserved parts are subject to no special laws and do not confine instances to kinds. Now relative to that possibility it is not nonsense to talk of the actual position of the human race in the course of nature as a whole as a random position. And what we have argued is that the hypothesis that we are in a singular region of nature tends to undermine itself because it is highly improbable that the whole course of human experience should fall (as it has done) into what on the hypothesis itself is a small exceptional region of the universe.

It must be noticed that this argument only applies at all strongly to the *general* characteristics observable in the part of the universe that has fallen under observation. It would be very extraordinary that, if only a small part of the course of nature confined its instances to kinds and its changes to regular rules whilst the rest of it did nothing of the sort, human experience should have happened to fall wholly within that small region. But it would not be at all extraordinary if in other parts of nature certain kinds which are predominant with us are not represented and conversely. In fact it is obvious that our experience makes it much more probable that the *general* characteristic of confinement to kinds extends widely beyond its limits than that the more *special* characteristic of favouring such and such kinds is widely extended. For the more special proposition implies the more general and not conversely; so that whatever is in favour of the former is in favour of the latter, but there may be evidence for the latter which has no special relevance to the former.

14.

Extension of Theory of Kinds.—So far we have argued that, even to a superficial observer, nature appears not to distribute its instances equally among possible sorts, and that it is reasonable to regard this general characteristic as probably extending much beyond the limits of human experience. But, to a superficial observer, confinement to kinds, though a striking characteristic of the observed part of nature, is by no means an universal rule within this part. In the first place there are occasional 'monsters'. Then again the contemporary states of various substances which would be counted as of one kind are never exactly alike. *E.g.*, the swans or crows that exist at any moment all differ more or less in their first-order properties. Again, if instead of thus taking a cross-section at a given moment, we consider the series of states constituting a given substance, they differ from each other in many first-order properties. And a point may be reached at which either the series stops altogether and the substance is said to have ceased; or else the first-order properties may change so radically whilst certain conditions of spatio-temporal continuity are still fulfilled that the substance is said to have 'changed into' one of another *kind*. There can be no doubt, I think, that the face of nature does present these aspects to all of us whilst we are still 'trailing clouds of glory behind us,' and that it continues to do so to many until the end of our lives.

Now at this stage there enters a characteristic habit of the human mind which has constantly operated with highly useful effects in the history of science. We draw a distinction between the superficial appearances of things and their more detailed and latent character. A contemplation even of the superficial aspects has strongly suggested to us some general rule, but there are a certain number of apparent exceptions. We then tend to proceed on the assumption that this general rule really is true without exception when the latent parts of nature are taken into consideration, and that the apparent exceptions can be explained compatibly with this view. Then we make more careful investigations with this idea as our guide, and we find that in a great number of cases the more accurately analysed and observed facts support the assumption. If this be so we tend finally to take the rule as a principle and to assume that any small residuum of obstinate facts which apparently refuse to come under it only *appear* exceptional because we have so far failed to find the right way of analysing or observing them.

I imagine that this is what M. Poincaré had in mind when he talked of laws being raised to the rank of 'principles' and then being 'true by convention' and 'beyond the attacks of experience'. It is important for us to consider the logical position of this habit. (i) In the first place we suppose that the law is strongly suggested to us by superficial observation. Now the law that all things are instances of kinds is quite as strongly suggested to us by observation as (say) the law that bodies continue to move uniformly in straight lines except for the action of other bodies. (ii) Our everyday experience has given us every reason to draw a distinction between things as they appear at first sight and things as they appear on closer inspection. Since things exhibit fresh details to us the more closely we observe them it is perfectly reasonable to suppose that they contain parts and details that we cannot observe at all. And, since the details that closer observation reveals are often found to be more important than those which were observable on a more superficial view, it is not unreasonable to think that the details which cannot be directly observed at all may be more important than any that can be observed. (iii) We have plenty of experience both of substances coalescing and of their separating; we know that the coalescence of two substances of the same kind generally gives a substance of that kind; that the coalescence of two of a different kind often gives one with different characteristic properties from either; and that sometimes when a substance splits up it does so into several of the same kind as itself and

sometimes into substances of different kinds. Now all these facts, which are common enough when we examine the world at all carefully, help to make the theory of kinds, which is so strongly, suggested but not wholly confirmed by superficial experience, more and more definite and rigid.

The notion of compounds and mixtures which differ markedly in their superficial properties from their components is suggested by experience of actually mixing and separating substances. Once suggested and recognised as a fact in the region of nature with which we have dealt, it enables us to hold that those things which are not on the face of them instances of kinds may yet be mixtures or compounds of things which are genuine instances of kinds. Thus one exception to a rigid theory of kinds (*viz.*, the existence of things of intermediate sorts) is removed by following out a suggestion which is (*a*) made plausible by our experience so far as it has gone, and (*b*) which that experience in its gradual development suggests to be extensible beyond the limit reached at any given moment by actual observation. But we cannot stop here, for we are still left with the fact that contemporary instances of the same kind that have actually fallen under our observation are not exactly alike, and that the successive states of what we regard as a single substance of a kind may differ seriously from each other. It is in connexion with these problems, I am inclined to think, that the notion of causation and of conditions becomes prominent.

15.

Kinds, Substances, and Causation.—We here meet again that irritating interweaving of various fundamental notions which we have already had occasion to notice and which makes it so difficult to treat the subject in any satisfactory logical order. Causal laws refer to the states of substances and special causal laws to the behaviour of special kinds of substances. But on the other hand, as we shall see, the definition of a kind of substances partly depend on the causal laws which substances of the kind are supposed to obey. And the identity of a substance of a kind may itself be defined by the fact that the states possesses certain properties which figure in some special way in a causal law. Let me illustrate before going further. Silver is a kind of substance, and the superficial marks of the kind are certain physical properties like colour, hardness, specific gravity, etc. Yet the vast majority of the silver in the world at any

moment is not represented by states with any of these properties; since most of it exists in chemical compounds of various sorts. A chemist in stating what he meant by silver would hardly trouble to mention these first-order properties. What he would do would be to mention how silver reacts under various conditions with various other substances. And he would count the characteristic properties of the various compounds of silver as much more distinctly characteristic of silver than the superficial properties of the metal itself. Thus when he talks of the characteristic properties of the kind of substance called *silver* he scorns to give us a mere enumeration of first-order properties, because he knows that these are constantly changing and that if he confined himself to them it would hardly be plausible to count silver as a kind at all. Instead he gives us second or higher-order properties, *i.e.*, statements of the characteristic mode of variation of the first-order properties under given conditions. Thus the characteristic marks of a kind involve conditions and causation. On the other hand all these higher-order properties themselves involve a reference to kinds of substances. They include statements as to what silver does in presence of chlorine, in presence of sulphur, and so on. Yet again these other kinds are themselves mainly recognised and defined by what substances belonging to them do in presence of other kinds of substances. If it is part of the 'definition' of silver that it is the kind of substance which gives a white insoluble compound with chlorine, it is equally part of the 'definition' of chlorine that it is the kind of substance that gives a white insoluble compound with silver. Lastly, when the chemist states all these second-order properties of silver he does not profess to be announcing merely analytical propositions; they cannot therefore be part of the meaning of *silver*, which must therefore be assumed to be known before the propositions are asserted. How are all these tangles and apparent circles to be straightened out?

I take it that the solution is somewhat as follows. The notion of silver as a kind of substance was first suggested by bits of metallic silver seen and touched under certain 'normal' conditions of illumination, etc. These first-order properties continued much the same through long series of states which had the sort of continuity with each other that constitutes them states of one thing. They were taken as the original definition of silver. But silver, defined in this way, is continually ceasing to exist as circumstances change. It is found however that when a 'silver series' stops and

is replaced (say) by a 'silver chloride series' certain regularities of mass hold between the two series, and under suitable conditions the 'silver chloride series' can be stopped and replaced once more by a 'silver series' in the old sense of silver. The mass of each state of this second silver series is the same as that of the first silver series. This identity of mass and of other first-order properties, the spatio-temporal continuity of the two silver series by the intermediation of the silver chloride series, and the regularity with which the silver series passes into a silver chloride series under one set of conditions and conversely under another, enable us to identify the first silver and the second. And these facts are summed up in the statement that the silver continued to exist throughout the silver chloride series in spite of appearances to the contrary. Now regularities of precisely the same kind hold for sulphur, chlorine, etc., defined originally by certain superficial first-order properties which persist under 'normal conditions'.

16.

We thus arrive at a distinction of kinds into kinds of the first, of the second, and (as we shall see in a moment) of higher orders. Kinds of the second order (chemical compounds) are true kinds in the sense in which we have all along been using the word. But the instances of them begin and cease in the course of history. This always happens, so far as our experience goes, by the coming together or separation of instances of kinds of the first order (chemical elements). Instances of kinds of the first order are taken to be persistent and not to have begun or ceased in the course of human experience. And this view is held in spite of the fact that such instances are constantly disappearing and apparently coming to an end; for, after all, chemical elements are much less common and less stable than chemical compounds. The explanation of this apparent paradox is however quite simple after what has been said above. The kinds which are so noticeable even on the most superficial view of the world are mostly of the second or third order. Swans, crows, etc., are kinds of the third order; for they consist of instances of certain kinds of the second order in certain characteristic proportions, arrangements, and extensions, about which they vary within narrow limits. The main reason why these are the kinds that strike us is their comparative stability. By this I mean t hat each instance of such kinds consists of a series of states with first-order

properties which vary very little even though conditions change a good deal. This is of course less true of kinds of the third order than of many of the second, for crows and swans die and decay, but many chemical compounds are intensely stable towards quite enormous changes in conditions. We can see then why it is kinds of the higher orders which first attract our attention and suggest to us the notion that confinement of instances to kinds is a general characteristic of nature, and that if we look more carefully we shall find that it is a rigidly general rule in spite of superficial appearances to the contrary. But, when we do investigate more closely, we find that these kinds which first struck our attention are not as a rule the most important kinds in nature. *E.g.*, silver chloride, as defined by its common physical properties, is an extremely stable kind; *i.e.*, these properties persist through long series of states under highly variable conditions. Compared with it silver, as defined by its common physical properties, is an unstable kind, for it is constantly tarnishing, dissolving, reacting, and so on. But under certain conditions a silver chloride series does wholly change its first-order properties and is succeeded by a silver and a chlorine series. Now we have no ground for saying that the silver chloride really persists after the change; for, if it does, does it do so in the silver series or in the chlorine series? It seems arbitrary to choose either. Again the mass of the silver chloride is now divided between the two series, and no silver chloride can be got from any one of them till either the other itself or an equal mass of some different sample of it is added to the first. We thus can attach a definite meaning to the statement that bits of silver and masses of chlorine persist in spite of appearances to the contrary; but, when we define persistence in this way, we have to deny that a bit of silver chloride persists when a silver chloride series ceases to show its defining first-order properties. Thus we reach the notion of first-order kinds and see that they are more important though less obvious superficially than those of higher orders.

At this stage the extremely peculiar character of the part of nature that has fallen within human experience becomes still more marked. For we find that every bit of matter that we come across can be regarded as either an instance of a kind of some order or as a mixture of instances of various kinds, and that the number of distinct first-order kinds is ridiculously small. We admit of course that there may be first-order kinds that we have never met with, and that what we take to be a first-order kind, may prove to be of a higher

order. But we do seem to have hit on the general ground-plan of the material world, however inadequate may be our knowledge of the details. And that ground-plan, suggested to us even by a superficial observation of nature, has shown itself to be capable of statement in a more and more rigid and exacting form as we have investigated nature more and more carefully.

17.

We have now seen that many of the most interesting properties of kinds of substances are not assertions about the *persistence* of the first-order properties of states of a series, but assertions about the ways in which such properties vary from state to state of a series with varying conditions. However Irish it may sound, it is true to say that the most important properties of first-order kinds are properties of second-order kinds. This of course simply means that, *e.g.*, the most important properties of silver are not the superficial physical properties of metallic silver, but are statements of the conditions under which metallic silver turns into such and such compounds and the conditions under which such and such compounds again give metallic silver. Now the identification of 'such and such' a compound of silver (*e.g.*, silver chloride) can only be made by mentioning enough of its properties to characterise it unambiguously. Thus it is true that most statements about first-order kinds are statements about the properties of the second-order kinds into and out of which they pass under given conditions.

Again, it is probably true that we should not have troubled much about conditions if it had not been for the changes in first-order properties that occur along a series of states regarded as constituting a thing. If first-order properties had all been highly persistent with varying conditions we should probably not have noticed that they depend on conditions at all. But, as it is, the variations in many series of states having thinghood force the notion of conditions on our attention, and then we come to see that even persistence of first-order properties depends on conditions and is only relative. Change the conditions enough and the most persistent first-order properties will begin to vary.

Now I am inclined to think that the notion of causation and conditions is best regarded as an attempt to reconstruct at a higher level the crude notion of things which has broken down on reflexion and minuter observation. I think that we shall see this clearly if we consider what is commonly

believed in practice about causal laws and the Law of Causation. In the first place it is always changes that are felt to need explanation, *i.e.*, if the series of states constituting a thing varies from state to state in first-order properties we are not inclined to accept this as an ultimate fact. Parallel with this, but less often explicitly noticed, is another fact. We find instances of the same kind coexisting at different places in space. Though we count them of the same kind the contemporary states of several of them will not as a rule be exactly alike. All crows are instances of a kind, but at every moment there are small differences between one crow and another. This is felt to demand some explanation. The cause of demands such as this should now be fairly obvious. Our original criterion of the persistence of a given thing was identity of first-order properties throughout a series of states possessed of spatio-temporal continuity with each other. In so far as the first-order properties vary throughout such a series the series departs from the standard of a persistent thing. Hence the need of an explanation for *changes* and the absence of need for an explanation of *persistence* is the need to reconcile a contradiction. We are determined (*a*) to go on talking of *this* thing and saying that *it* persists ; indeed this is implied by calling the change a change in *it*. But (*b*) our original criterion of identity uses persistence of first-order properties. The need for explanation of change is the need for a less simple-minded criterion of one thing and of the persistence of a thing, which shall be compatible with both change and identity.

Again our ideal kind, suggested to us but never wholly exemplified in the world as we have found it, would have a large number of *exactly* similar instances. Actually we find large numbers of *very* similar but partly different states coexisting in various parts of space. Our demand for explanation is the demand to be allowed in some way to keep our notion of kinds as possessing *exactly* similar instances and yet to admit that the contemporary instances very rarely are exactly alike.

18.

These two closely connected demands are, I think, to be regarded as being in the strictest sense postulates and not axioms. They set us a problem, but there is no guarantee *à priori* that it will be soluble. What I mean is that it is not in the least self-evident that the universe *must* respond to our demand for permanent substances and for ideal kinds in some new sense of permanence and of kind, when it has failed to

answer completely to our original criterion. The actual fact seems to be this. The world as it presents itself to superficial observation fulfils to a highly surprising extent the condition of consisting of permanent substances of a few marked kinds. It fulfils this still better when we investigate more closely. But it does not fulfil it altogether. The position is that it fulfils it so well as to raise the expectation that a modification of the definition of permanence and of kinds, which shall be in the spirit of the original definitions, can be found, and that with this definition the universe will *strictly* consist of permanent substances belonging to a few ideal kinds. I am prepared to believe, if anyone can produce satisfactory evidence, that this expectation, in a crude form at least, is innate. This is of no logical importance, however; the really important point is that it is not *à priori*, that it is perfectly conceivable that the universe might not answer to these demands and that no such amended definitions that might be suggested would help us.

Now it will be found that the Law of Causation, as actually used, is such that if it be true the world does consist of permanent substances of a few ideal kinds, in a perfectly reasonable sense of *permanence* and *kind* which is only an extension of our original senses of these words. The Law of Causation says that every event has a cause. It refers to definite particular events and to each one ascribes another definite event or set of them as *its* cause. What then is meant by *a cause?* Evidently it has something to do with causal laws, but the precise connexion is not at first obvious. Causal laws, even in their crudest form, connect, not definite particular events, but classes of abstract events. For they imply the possibility of recurrence under varying conditions and at different times and places. Even the crudest sort of causal law is doubly abstract; it takes the form: Whenever an event of the sort η happens to a substance of the sort α an event of the sort η^1 follows after a certain lapse of time t in a substance of the sort α^1. Of course as a particular case η^1 and η may be the same kind of event, α and α^1 may be the same kind of substance, and the two events may happen in the same substance. Again, of course, the antecedent in a causal law may be several abstract events in substances of several kinds; and these events may not be contemporary with each other. The same is true of the consequent. But in any case the important point for us to notice is (*a*) that the antecedent and the consequent in any causal law are doubly abstract and (*b*) that the Law of Causation, on the contrary, is an assertion about definite events in definite

substances. To use a phrase employed by Mr. Russell in *Principles of Mathematics* the Law of Causation deals with 'the causation of particulars by particulars'; and we have to reconcile this with the fact that no causal law deals with particulars at all.

The way to reconcile the two facts is as follows. We assume that any definite particular event can be unambiguously *described* by mentioning a finite number of abstract characteristics. These together tie us down to one definite substance or set of substances and to one definite event or set of definite events in these substances. Each of the characteristics used in the description is abstract, and, taken by itself, can recur at other times and places and in other substances. Each can therefore be taken (say) as the consequent in some causal law, and the antecedent of each in that causal law will, of course, again be abstract. The further assumption is that these abstract antecedents when taken together will once more suffice to tie us down to a single definite event or to a set of definite events in a single definite substance or set of definite substances. This event or set of events is then *the* cause of the definite event or set of events with which we started.

Thus the Law of Causation, in asserting that every event has a cause, makes the following three assumptions. (i) Every definite event can be unambiguously described by mentioning a finite number of its abstract characteristics. (ii) Either each of these characteristics taken separately, or selections out of them which together exhaust them, are consequents in causal laws. (iii) The antecedents in these causal laws are a set of abstract characteristics which, when taken together, unambiguously describe a definite event or set of events.

19.

We have now seen what the Law of Causation asserts; we can now see how it enables us to extend our definitions of *kind* and of *permanent substance*. The individual instances of a kind (even of a first-order kind) do constantly change their first-order properties, and thus at any moment two instances may be in very different states. But all these changes are subject to laws; these are characteristic of the kind, and they do not change. The permanence of first-order properties and their exact similarity among all instances, which first suggested kinds and permanent things, breaks down; but it is replaced by permanence of laws, *i.e.*, of second

and higher-order properties. Contemporary states do not now cease to be states of substances of the same kind merely because they differ in their first-order properties; for these differences in first-order properties are compatible with, and indeed are the consequence of, identity of higher-order properties combined with the varying external conditions which are implied by differences of place.

Pari passu with this modification of the notion of a kind goes a change in the notion of the permanence of a given thing. In the first place, even though spatio-temporal continuity throughout a series of states be still demanded as a necessary condition of identity, we no longer demand exact similarity of first-order properties. We are content with permanent laws + reversibility. By this I mean that if S be a certain state of a certain substance we do not demand that every state of a series shall be exactly like S in order to count as belonging to the substance; we admit very different states under different conditions; but we do demand that by suitably reversing the conditions any state that has happened in the series can be reproduced. And we assume that when this condition is not fulfilled we are not dealing with an elementary substance, and that all substances which do not fulfil it are compounded of substances which do fulfil it.

I think that we also demand some kind of first-order identity throughout the series, though it may be very slight, and, to superficial observation, very unimportant and obscure. This is why we make so much of all laws of conservation, *e.g.*, the conservation of mass, of energy, of momentum, and so on.

Corresponding to these changes a new notion is introduced side by side with the old notion of things. This is the notion of the causally isolated system. The old single substances of common sense, determined largely by spatial continuity of matter within a limited region still persist, but the notion of the isolated system composed of several such substances separated in space, largely usurps their place. Such a system is one in which all the laws governing the changes of first-order properties throughout the parts refer only to other parts of the same system and to their spatial relations and not to anything outside the system. An isolated system is thus the old single substance in a much modified and purified form. The importance of continuous filling of a boundary has diminished, and the parts are not series of precisely similar states. But, regarding the system as a whole as a substance spread out in space and time, all its variations follow constant rules and none of these rules refer to anything outside itself.

The existence side by side of the new notion of the isolated system and the old criterion of one substance as what fills a certain boundary leads to the distinction between immanent and transeunt causation. The causal laws characteristic of the system are immanent to *it*, as referring to nothing but its parts, but are transeunt to each of its parts, as referring to changes in other parts to account for the changes in any given part.

Complete causal isolation is of course an ideal rather than a fact. What we find is that a system is isolated for certain changes in its parts and for a certain degree of accuracy in accounting for these changes; for other changes and for greater degrees of accuracy different and in general larger systems must be considered. But it is evident that the law of causation would be a useless platitude and that the notions of permanent substance and kind would have broken down beyond hope of salvation if nature were not so constituted that there are systems much smaller than the whole of nature which are for many changes practically isolated.

20.

Let me at length sum up the results of this long, confused, and confusing discussion. All particular inductive arguments depend on probability and only lead to probable conclusions, *whatever* we may assume about nature. But *unless* we assume something about nature they give no finite probability to any law (*a*) because an indefinite number of alternative hypotheses which are not laws are as probable antecedently as the suggested law, and (*b*) because we are not equally likely to have met with any instance of the class under discussion, since it is quite certain that if there be instances remote in space or time they *could* not have fallen into the selection which we observed. What we actually assume is that nature consists of a comparatively few kinds of permanent substances, that their changes are all subject to laws, and that the variety of nature is due to varying combinations of the few elementary substances. These assumptions are neither self-evident nor mutually independent nor are they capable of complete proof or disproof by experience. The actual course of the process by which we reach these assumptions is somewhat as follows. Nature, even as known to us superficially, presents a surprisingly selective appearance. Of sorts of substances which are *à priori* possible and could be perceived if presented only a very small selection is presented, whilst those sorts which we do meet with have

very large numbers of instances. And, to a superficial view even, there are many series of states in nature which have the kind of spatio-temporal continuity which characterises a thing and moreover show practical constancy of first-order properties over long periods of time. Reasons have been given to show that this appearance can hardly be due to limitations of our powers of perception and interest *within* the spatio-temporal field of actual human experience. The view that these characteristics may only be true of a small part of nature into which we happen to have fallen was then discussed. It was argued that, as an objection to the possibility of induction, the argument is unsatisfactory. Either it literally assumes that our connexion with the part of nature with which we are connected is a random one, or that we have arisen here rather than elsewhere because of laws of nature. The latter view *assumes* laws of nature in regions spatio-temporally outside that with which we have come in contact through experience, since the supposed conditions for the origin of human experi*ents* cannot themselves have fallen within the region of nature open to direct human experi*ence*. If, on the other hand, the view that the human race is as likely to fall into one part of the course of nature as into another be taken literally, we can show that it is highly improbable that the general characteristic of confinement to kinds, which we have noticed, extends but slightly beyond the limits of human experience. We thus seem justified in disregarding the possibility that this characteristic of the experienced world does not extend beyond it, as an argument against induction.

Up to this point, however, we can only say that experience has *suggested* a simple ground-plan of the material world to us, and that it is reasonable to suppose that this plan extends beyond what we have actually experienced. So far we have neither formulated the plan in rigid terms, nor, on the face of it, does nature, even as experienced, completely accord with it. At this stage the distinction between elements and compounds and between the perceptible and imperceptible parts of bodies, a distinction itself suggested by much even in the crudest experience, comes to our help. Pursuing this suggestion we have found it possible to regard nature as built up of a comparatively few natural kinds of the first order, all instances of which are *exactly* alike and *completely* permanent. An analysis of the meaning of kinds and of the permanence of substances has shown us what is the precise 'cash-value' of these statements. It has shown that it is because nature, so far as our experience goes, obeys laws in

its changes, that the criterion of persistence of substances and sameness of kinds, which broke down when we confined ourselves to first-order properties, can be rendered satisfactory by taking into account second and higher-order properties. It follows that it is a fundamental error to take the scientific notion of substance by itself as 'something that any fellow can understand,' and then raise difficulties about the law of causation. The notions of permanent substances, genuine natural kinds, and universal causation are parts of a highly complex and closely interwoven whole and any one of them breaks down hopelessly without the rest.

The upshot of the matter is that whenever we make a particular induction we have this general view about nature at the back of our minds. If we think that we have hold of a substance that is an instance of one of the few fundamental natural kinds, we attach great weight to our induction, otherwise we do not. The logical position is then (*a*) that those inductions which we regard as highly probable are so relatively to the belief that we really have got hold of the general ground-plan of nature in the region of phenomena under investigation; (*b*) the evidence for this is never of the nature of a 'knock-down' proof and no numerical probability can be assigned to it. The kind of evidence is that this plan is suggested to us in a rough form by crude experience, and that, as we investigate nature more and more thoroughly, experience itself *suggests* ways in which we can state this plan with greater and greater definiteness and rigour, and, at the same time, nature is found to *accord* with the more rigorous and definite plan far better than it did with the first crude suggestion of a plan. *E.g.*, we believe that we have got very near to the ground-plan of the material world in the theory of chemical elements, in the laws of mechanics, and in Maxwell's equations, and it is relative to these beliefs that particular inductions in chemistry, electricity, etc., are practically certain. The certainty of the most certain inductions is thus relative or hypothetical, and the probability of the hypothesis is not of a kind that can be stated numerically.

21.

I think that the actual history of the natural sciences bears out this view. They flounder about in the dark till some man of genius sees what are the really fundamental factors and the really fundamental structure of the region of phenomena under investigation. In mechanics the keystone is the notion of acceleration; in chemistry it is the theory of

elements and compounds and the conservation of mass; in economics, perhaps, it is the notion of marginal utility. Sciences where no such discovery has yet been made, such, *e.g.*, as psychology and biology are almost at a prescientific level; their inductions carry no great conviction to anyone trained in the more advanced sciences.

At the beginning of the first part of this paper I told the reader that I was extremely doubtful as to the additional principles about nature, which are needed if any law is to be rendered reasonably probable by induction. I have done my best in this second part to indicate the beginnings of an answer to my own question. But I am painfully aware that the article is complex and diffuse without being exhaustive. There is hardly a line in it which I could seriously defend even against myself if I chose to be an hostile critic. But I print it in the knowledge that if I now spend more time I shall only puzzle myself more thoroughly, and in the hope that its very badness may convince the charitable reader at least of the extreme difficulty of the subject.

III.—ON THE NATURE OF MEMORY.

By Dorothy Wrinch.

I.

In beginning a study of the phenomena of memory, it is expedient first to point out an ambiguity in the words "memory" and "remembering" as ordinarily used. Suppose I say "I remember the face of the girl I saw yesterday". I may mean one or other of two things. I may mean that a definite phenomenon is occurring which may be called "a memory of the face of the girl I saw yesterday". On the other hand, I may mean that I could produce a phenomenon of this kind. With the second meaning of the word, the fact of my remembering the so-and-so is a fact of the form: under certain circumstances, I shall have an act which is a remembering of the so-and-so in the first sense. A memory of the second kind can be called a dispositional memory and one of the first kind a memory act. A dispositional memory, then, can be said to be a possibility of memory acts. This same ambiguity occurs in the case of knowing and a differentiation of knowings into dispositional knowings, and acts of knowing is a necessary prelude to any investigation of the nature of knowings in general. The relation between acts of a special kind $a\,(a)$, *e.g.*, fearing and the corresponding dispositions $a\,(d)$ as for example, when I say "I fear lions," or "Men fear thought," is very interesting and can be exhibited in the form:—

X has the disposition $a\,(d)$ = there are circumstances under which X would have an act which is an $a\,(a)$,
or as we may perhaps be allowed to express it:—

$a\,(d)$ is the possibility of $a\,(a)$'s.

Since the question of the relation between acts and their corresponding dispositions is one relevant not only to the case of memory, but also to very many other groups of psychological phenomena, it is best to leave the discussion of its nature and to confine ourselves in this enquiry into the nature of memory, to a discussion of memory acts.

Two artificial restrictions on the field of memory acts are to be made in this paper. First, I wish to discuss only those memory acts in which images occur: and in the second place, I wish to limit the class of memory acts to be discussed to those memory acts, which are memories of physical objects or of events of the same status. One object of the first restriction is to exclude at once those acts in which sense-data occur. I mean cases where, *e.g.*, one remembers a picture on seeing it again. These seem to me best called recognitions: though they share to some extent the properties of other memory acts, it is more convenient for the sake of the adequate discussion of properties they do not share, to discuss them separately. The other object of the first restriction is to exclude those cases of memory acts (if there are any such) in which there is no image element—the kind of occurrence that "remembering an idea" might possibly be. It does not seem clear that in every memory act an image occurs: it was therefore deemed best to make a restriction on the field of our enquiry which would exclude such image-less memory acts if they existed.

By means of the second restriction we are limited to a discussion of (1) those memory acts which are of the form [1]

X remembers the so-and-so, or *X remembers a so-and-so*, or as it may be put more clearly,

X remembers the one and only thing having the property ϕ and

X remembers something having the property ϕ

where the property ϕ is significantly predicable only of physical objects (A)

and (2) those memory acts which are of the form [2]

X remembers E where E contains at least one constituent given only by the description "the one and only thing having the property ϕ" or "a thing having the property ϕ," where again ϕ satisfies the condition of being significantly predicable only of physical objects. We shall therefore have to deal with

[1] Except in one or two cases that may be regarded as altogether exceptional and best treated by themselves. I mean such a case as when I am remembering something which I am simultaneously perceiving. Pointing to some one in the room, or to a picture on the wall, I may say: "I am remembering you," or "I am remembering this". The act is then not of the form specified.

[2] The same kind of exceptional cases occur here. I may say looking at the picture: "I remember this being here". I think in such a case no constituent of the event expressed by "this being here" is given only by a description ambiguous and unambiguous. The question of these exceptional cases turns to some extent on the peculiar nature of what Mr. Russell has called "emphatic particulars," *cf. Monist.*

memories such as those of "the clown at the pantomime I went to yesterday," "a dog," "Lopokova dancing in Prince Igor the day before yesterday," and "a Frenchman looping the loop in 1910".

These two restrictions limit our field very considerably. It may be the case that the first is unnecessary if we have the second: for it might happen that all memories of physical objects and events of the same status have an image element (whether or not this is *only* true of physical objects and events of the same status). And it may be the case that the second restriction is unnecessary if we have the first: for it might happen that all memories which have an image element are memories of physical objects and events of the same status (whether or not all memories of physical objects and events of the same status have an image element). However, in order to limit the field as we desire, it is clear that it is necessary to have the second restriction: for cases of memories of things other than physical objects and events of the same status occur. I may remember "the suggestion made last week," "seeing a dragon in a dream," or "the properties the gamma function".

Our restrictions on the field of memory acts to be discussed leave us then with acts in which an image occurs (and such acts we will call "image acts") and which are memories of such things as "Paderewski," "one of the people in the last act of the pantomime," "The King opening Parliament," or "a cartload of monkeys going down the street".

Since we have to investigate the nature of acts which are memories of physical objects or of events which themselves have reference to physical objects, statements about memory acts will necessarily involve physical objects. Such propositions then form a sub-class of the propositions whose significance has to be investigated when an interpretation of propositions about physical objects is being attempted. We cannot here attempt any such interpretation, nor can we try to criticise suggested interpretation in relation to the interpretation of propositions about memory acts. It is only necessary to make one observation. In Mr. Russell's interpretations[1] in which physical objects are said to be logical constructions, the form of the propositions which result when the suggested interpretations of physical objects are worked out, is very different from the form of the original propositions. It should therefore be remembered that some interpretations—certainly all those which suggest that any

[1] *Our Knowledge of the External World.*

of the constituents are logical constructions—will interpret propositions into propositions of a very different form. All through this paper, then, in the discussion of the characteristics of memory acts, it must be borne in mind that the forms of the various propositions which occur may not be the form of the propositions which we get when some special interpretation of physical objects has been adopted.

In our enquiry we shall endeavour to discover as many different characteristics of memory acts as possible. We hope at least to discover characteristics sufficient to distinguish them from acts which are not memory acts. We do not think it feasible to aim at finding the ultimate constituents of memory acts, partly because it would be a bold act to advance any view as to what are the ultimate constituents of psychological phenomena, and partly because it seems impossible in the present obscure state of epistemological theory to do more than discover some of the kinds of psychological phenomena which are involved in memory acts. But I wish to attach a special significance to the word *involved*. If A is an act and f is the fact whose existence can be asserted if and only if that act A occurs, then f may or may not have another fact as a constituent. If it has—and it is then generally called a molecular fact—the existence of the fact logically implies the existence of another fact f^1. Now, I wish to use the word *involved* in such a sense that an act A involves an act B, if the fact whose existence the occurrence of A enables us to assert has as a constituent a fact which exists if and only if the act B occurs. We are, then, attempting in this paper, to discover the nature of some of the acts involved in memory acts from an investigation of some of the acts which are involved in particular cases of memory acts. Our method will be to bring forward for consideration as many different kinds of memory acts as possible and to discuss in the order which seems most convenient the various aspects of the phenomena involved.

II.

The class of memory acts with which we are dealing is a certain sub-class of image acts. We may begin studying the difference between these memory acts and imaginings by reference to the image element. It is not, I think, difficult to see that a memory and an imagination image do not differ intrinsically. Suppose X describes Y to Z. Even if Z has not seen Y, X's description may be so good and Z's power of

making images from descriptions so great that the images in Z's mind resemble Y very closely.

The image in an act of memory, therefore, is not to be differentiated from the image of an act of imagining by any intrinsic property. The image in a memory act could very well be the image in an act of imagining. We are left then with the problem of distinguishing memory acts and imaginations still on our hands.

But if we consider a little more closely what happens in an act of memory and in an act of imagining, it will appear that there are other properties of these acts which might provide a basis for differentiation. First: can we differentiate memories from other image acts by reference to their objects, *i.e.*, by reference to the physical object or event of which they are memories? Now, we can only remember what we perceive. It may be the case that there are objects which can be imagined but not perceived and therefore not remembered: if this were so, we should be able to say definitely that an act having any of these as object could not be an act of memory. But it is certain that there are objects which can be both remembered and imagined. And acts having any of these for objects could not be differentiated into memory acts on the one hand and imagination acts on the other by reference to the object alone. But this does not exclude at once the possibility that the differentiation might be effected by reference to some other property of the object. Take for example the property of an object "having been perceived by me" or the corresponding property for an event. Can we say that if A is an act of my remembering or imagining B, that it is a remembering if and only if B has this property? This would provide a differentia for memory acts. But if we call X the subject of an act A when A is the act of X remembering or imagining something, I think cases occur where an act is a pure imagining, and yet, the object has previously been perceived by the subject. Suppose I am talking to X about various people and he mentions γ whom as a matter of fact I have seen but have forgotten. He describes γ to me, her eyes, the shape of her face, her nose, and her complexion, and I get an image. I then go over the various details of the description and perhaps modify the image. Often such a process will cause me to remember γ. But on the other hand it may happen that it is such a long time since I saw γ or that I found γ so uninteresting and paid so little attention to her when I saw her that I still do not remember her. Then I shall be imagining an object which has the property of having been perceived by me. Many

cases which have come up in psycho-analytic practice point to the same result. A patient is troubled by a particular image which comes into his mind very frequently, and he is worried by not knowing of what it is an image. In the course of treatment he comes finally to *remember* some event in his childhood, and to recognise that the image was an image of this event. The initial experiences were cases of image acts, not memories, notwithstanding the fact that the event in question belonged to the past experience of the subject. Our suggested criterion, then, falls to the ground for the property of objects which was to divide those which could be imagined from those which could be remembered can be possessed by objects of imaginings as well as by objects of memory acts. The question as to whether any property exists which would be adequate to give the division we want cannot be discussed for all properties at once. But in default of any other property suggesting itself we will make an attempt to effect the differentiation in another way. The only way, then, of deciding the question will be to discover various properties and investigate in the case of each one its adequacy for the purpose.

III.

Now memory acts vary very much. We get memories when images seem merely to float before the mind. We get also acts which involve very definite beliefs. It is the belief aspect of acts which is one of the most interesting for the epistemologist, and it is worth while trying whether this aspect will enable us to distinguish memory acts from imaginings. But, it is not of course the case that in imaginings there is no belief element. Take the case when X describes Y to Z and Z has an image of Y. When Z has got all the features right in his image of Y, looking at it, he may come to the conclusion that Y is a beautiful woman—or that Y's nose is too big for her face. These are judgments. The presence of a belief in an image act does not therefore mark off memories from imaginings. But suppose we try the *form* of the belief. This might differentiate memory acts from other image acts.

We are neglecting, then, for the moment, those memories in which there are no beliefs involved. The forms of the beliefs in the other memory acts are difficult to express with any degree of accuracy, and in the immense variety of memory acts the beliefs involved vary a good deal. There is, I think, no reason to suppose that a memory act involves only one

belief at most. It may therefore be the case that there are different kinds of memory acts which are to be differentiated by reference to the class of belief involved in them, and that all these classes have a common member, which may be taken as the differentia of memory acts in general. But we will consider a few particular cases of memory acts.

(1) I have an image before me and I believe: "This is an image of something I have seen". This is the only judgment [1] which occurs. Now for the sake of comparing this judgment with other judgments we may express it in the form [2]

$$\exists x \,.\, \mathrm{OR}x \,.\, \phi x$$

where O stands for the image, R for the relation *is an image of* and ϕ for the property *is something I have seen.* Introducing the symbol d_ψ by the definition

$$\mathrm{F}(d_\psi) := : \exists x \,.\, \psi(x) \,.\, (\mathrm{F}x) \qquad \mathrm{D}f$$

The judgment can then be exhibited in the form

$$\mathrm{OR}d_\phi \qquad (1)$$

(2) Next I have an image and I judge that it is an image of something I have seen. But I go further—I judge that it is an image of one of the Oxford and Cambridge Boat Races, either the 1910 one, the 1911 one, or the one in 1912. I have been to all three of these Races, but my recollection of them has become a recollection of the three collectively and I cannot distinguish them in my mind. But, at any rate, I feel quite sure that it is one of these Boat Races that I am remembering. Here, in addition to the judgment (1) there is a judgment of the form "O is an image of one of the Oxford and Cambridge Boat Races, the one in 1910, 1911, or 1912". If χ is the property, *is one of the three Boat Races* 1910, 1911, *or* 1912, we can exhibit this judgment in the form

$$\exists x \,.\, \mathrm{OR}x \,.\, \chi(x)$$

or making use of the notation

$$\mathrm{OR}d_\chi \qquad (2)a$$

Cases of memory judgments also occur when the image is to be an image not of a so-and-so but of *the* so-and-so: as an example one can take a case of remembering one's father. Here we can put the judgment in the form "This is an image of the one and only one man who is my father". Writing ψ for the property *is my father*, we get the judgment expressed in the form

$$\exists x : \psi y \,.\, {}_y\!\equiv \,.\, y = x : \mathrm{OR}x.$$

[1] Use the words judgment and belief as synonyms.

[2] I shall not give explicitly the analogous judgment forms for memory of event.

But it will be convenient to introduce a notation for unambiguous descriptions parallel to the notation we have introduced for ambiguous descriptions. If ud_ϕ is defined by

$$\mathrm{F}(ud_\phi) : = : \exists x : \phi y \,.\, {}_y\!\equiv\!. \, y = x : \mathrm{F}(x) \qquad \mathrm{D}f$$

the judgment we are discussing can be given in the form

$$\mathrm{OR}ud_\psi \qquad 2(b)$$

Now in order to get this judgment in a memory act, it is clear that I must have seen my father. A posthumous child may be able to make this judgment when looking at a photograph after it has been properly instructed as to the original of the photograph. But it could not make such a judgment in a memory. And an analogous result holds good in the case of the Boat Races.

(3) A slightly different case will occur when I make a judgment "This is an image of one of the scenes in the play I saw yesterday," or "This is an image of the man I met coming in this evening". Now, these cases can be exhibited in entirely the same form as (2) a and b

$$\mathrm{OR}d_\chi \qquad 3(a)$$
$$\mathrm{OR}ud_\psi \qquad 3(b)$$

except that the properties *is one of the scenes in the play I saw yesterday* and ψ *is the man I met coming in this evening* refer definitely to a past perception of mine. Now, we pointed out that in the cases 2 (a) and (b) where the predicates were *is one of Boat Races* . . . and *is my father* I must as a matter of fact have seen one of the Boat Races and I must have seen my father. This I suggest is a particular case of a general statement one can make about memories of this kind. If I judge

$$\mathrm{OR}d_\chi \text{ or } \mathrm{OR}ud_\psi$$

there is some property χ^1 and some property ψ^1 such that χ^1 and ψ^1 are satisfied by those terms which satisfy χ and ψ respectively and by those terms only, and χ^1 and ψ^1 have reference to a past perception of mine. We will express this in the form: when X is having a memory act containing a judgment of the form $\mathrm{OR}d_\theta$ or $\mathrm{OR}ud_\theta$ then

$$\exists \zeta : f_{\mathrm{X}}(\zeta) : \theta(x) \,.\, \equiv^x \,.\, \zeta(x) \qquad \boxed{\mathrm{A}}$$

where f_{X} is the property *involves a reference to X's past perceptions.*

(4) But there are further varieties of judgments in memory acts. I remember X my friend in Dublin. I have an image O. I make the judgment "Why that is my friend in Dublin

she *has* got a charming face". This judgment can be put in the form

$$\mathrm{OR}ud_{\phi} \,.\, g(ud_{\phi}) \qquad 4(b)$$

where ϕ is the property *is my friend in Dublin.* We get also judgments such as "This is one of my oldest friends: she has dark hair" which can be represented in the form

$$\exists x \,.\, \mathrm{OR}x \,.\, h(x) \,.\, d_{\phi} = x \qquad 4(a)$$

It will be noticed that in 4(*b*) a judgment of the form 2(*b*) is involved.

(5) Then we get cases where the form is the same as for these judgments but the properties ϕ contain a reference to the subject's past perception, as for example, when ϕ is the property *is the girl I saw in Paris* so that the judgment would run, "That is the girl I saw in Paris, she *has* got a charming face"—or when ϕ is the property *is a girl that I used to see on the way to school*, so that the judgment would run, "That is one of the girls I used to see on the way to school; she has dark hair". Then for the cases (4) and (5) we can say that when X is having a memory act containing the judgment

$$\mathrm{OR}ud_{\theta} \,.\, g(ud^{\theta}) \text{ or } \exists x \,.\, \mathrm{OR}x \,.\, g(x) \,.\, x = d_{\phi}$$

then it is true to say

$$\exists \zeta : f_{\mathrm{x}}(\zeta) : \theta x \,.\equiv\, .\, \zeta x \qquad \overline{|\mathrm{B}|}$$

These forms, I think, exhaust the varieties of memory judgments. The constants involved in them are merely the relation R *is an image of* and the property (for different X's) f_{x} *has some reference to a past perceiving belong to X.*

The question as to whether in a memory act, a judgment of the form (1) must occur or whether a judgment of any of the other forms may be the sole representative of judgments of the forms in 1, 2, 3, 4, and 5 or in what kind of combinations they occur is difficult. It is an interesting question to consider the relation between the various judgments (if there are memory acts in which more than one judgment occurs) in a single memory act.

But one aim in our analysis of the form of memory judgments was to find a way of distinguishing memories from imaginings. We have recognised the existence of judgments in imaginings, so the question is: Can we show that no imagining contains a judgment of any of the forms of memory judgments?

Suppose a case of imagining where X is asking Y to describe to him a certain cathedral A. Suppose Y had been to see several cathedrals in France a few years ago and had written

a description of each. He cannot remember A now but he reads the description and gets an image of A. He may still not remember the cathedral A; in fact when he scrutinises his image O he may say to himself, "Fancy my forgetting A, it is such a lovely building. I have seen it, I know, but I should never have known it again." Now, in some reflexion like this, the judgment "I have seen this" might occur. And this judgment could be moulded into the form (1)

$$\mathrm{OR}d_{\phi}$$

where ϕ is *I have seen A*. The first form of the memory judgments then which we have put forward is not peculiar to memories.

And it is not difficult to find cases of imaginings involving judgments of the forms (2) *a* and *b*. If one is studying geography one might keep images in one's mind of various places and it might very well happen that some of the places were places one had seen. Suppose my friend X comes up to me when I am studying laboriously the geographical features of all the large towns in Southern China and points out the place where I spent Christmas, 1910. On getting an image from the description of this town in the book, I say to myself "This is an image of the place where I spent Christmas, 1910". This gives a case of a judgment of the form 2(*b*); and we can easily get a case of an imagining involving a judgment of the form 2(*a*).

Only the forms (3) and (4) and (5) remain to be discussed. Examples of judgments about images which are of these various forms and are not memory judgments are easy to find. We are then forced to the conclusion that the form of these judgments gives us no way of distinguishing memory acts from acts of imagination.

IV.

There is a further possibility. Is there any epistemological property of the judgment which will yield a criterion for memory judgments as opposed to imaginings?

Judgments can be classified from the epistemological point of view as primitive or derived, and by this classification one means to divide those judgments which are obtained by inference from other judgments from those judgments which are made directly and not inferred or deduced from another judgment.[1] The nature of inference is itself very obscure,

[1] Very many different meanings have been given to the word inference, but I want to use it in such a sense that (1) no act can be an act of inference unless it contains at least two judgments; (2) an act can be an act

and to adopt any classification which depends upon it is not of course to offer any ultimate solution of a problem; but in any science which is of a complicated structure we have as one of our first aims "the organisation of problems"—and I include in what I mean by this phrase the investigation of the relations between different problems. The knowledge that one problem depends only on a certain other problem, in default of the complete solution of the problem is a step in this organisation. If then the differentiation we are seeking can be given in terms of the difference between inferred and uninferred judgments, we shall have obtained a relation between this problem and the problem of inference: this will be a satisfactory result from the epistemological point of view.

The point to be discussed is: Can the judgments accompanying memories and imaginings be distinguished by reference to their epistemological status? I think they can. For take the cases we cited of judgments in imaginings having the forms (1) and (2). The judgments were all inferred judgments. Y only knew that the image of the cathedral was an image of something he had seen because he judged that his image represented something which had certain properties. The process of establishing his belief that this was an image of something he had seen before included going over the image and checking it from the description in the book. And there is most clearly inference in the other cases I cited.

We suggest, therefore, that every memory act which involves a judgment involves at least one primitive judgment. Now it may be the case that every memory act involves a judgment of the form "This is an image of something I have seen". If so it will be sufficient to show that a judgment of this form occurring in a memory act is always a primitive judgment. If, however, not all memory acts involving judgments involve a judgment of this form, it will be sufficient if we can show that in any memory act at least one of the judgments of the forms 1, 2, 3, 4 or 5 which it involves is primitive. But even this condition is not necessary for our point. For it may be the case that there is a much larger class than the class of judgment of the forms 1 to 5 such that any memory act involves at least one judgment having the form of one or other of this larger class of judgments.

Now it is not necessary to linger over rendering plausible the view that the judgment "This is an image of something

of inference and yet not be a case of logical inference, either deductive or problematical.

I have seen" is primitive whenever it occurs in an act of memory. Our examples of imaginings in which such a judgment is a derived judgment suggested the view that if it occurs in an act of imagining it is not primitive, and I think it is not extravagant to complete this by advancing the view that if the judgment is not primitive it is an act of imagining and not a memory.

We wish, therefore, to say that an act in which a judgment of the form "This is an image of something I have seen" occurs, if it is either a memory or an imagining, is the one or the other according as the judgment is primitive or derived. The differentiation of memory and imagination acts is then accomplished, if in every memory act a judgment of the simplest form is involved. But suppose it is not. If we have to allow that in some memory acts no judgment of the simplest form occurs, in order to prove that every memory act involves at least one judgment which is uninferred and of one of the forms 1 to 5 it will not, I think, be necessary to examine separately memories involving a judgment of the form 2 (the corresponding case for judgments of the form 1 has already been discussed), the case for memories involving a judgment of the form 3, but not one of the form 2 and so on. Suppose we call a judgment of the form 1 simpler than one of the forms 2 or 3 and a judgment of the forms 2 or 3 simpler than one of the forms 4 or 5. Then I think it will be plausible to say that in all cases of memories involving judgments, at least the simplest of the judgments of the forms 1 to 5 is uninferred; and if (as indeed seems very probable) any memory act which involves a judgment involves a judgment of the form "This is an image of something I have seen" this suggestion is equivalent to the result just put forward. It may very well happen that I have an image O and I judge about it (1) that it is an image of one of the Oxford and Cambridge Boat Races and (2) that it is an image of the Boat Race of 1913, where the second judgment is an inferred judgment and the first uninferred. In spite of the inferred judgment (2) this act will still fall under the criterion we have suggested. And other representative cases of memory acts involve inferred judgments, but there is always one at least of the forms 1 to 5 which is uninferred.

V.

If what we have said is true, and if the considerations we have brought forward are conclusive (as we hope they are), we have succeeded in differentiating this class of memory

acts by reference to the occurrence of at least one primitive judgment. Even if there are some memory acts which involve no judgment having any of the forms 1 to 5, it may be possible to obtain a differentiation in this way, since as we have pointed out, the suggestion we have discussed gives a sufficient but not a necessary condition that all memory acts which involve judgments may involve at least one primitive one.

We shall then temporarily define memory acts which involve judgments as image acts which involve at least one primitive judgment.

But we have not yet considered the question of memory acts which involve no judgments. Since it is obscure whether or not any such acts exist, our plan will be to offer a method which would enable us to distinguish memory acts which involve no judgments from other image acts, but to avoid discussing whether there are any memory acts of this kind.

In the first place, the non-existence of a judgment will not differentiate a memory act of this kind from an imagining, for there are imaginings which have no judgment element. A memory act involving no judgment would presumably be an image act involving a feeling directed towards the image. And the mere existence of a feeling directed towards the image is no differentia, since an imagining frequently involves a feeling directed towards the image. Now, there is, I think, a particular kind of feeling in an act which one recognises as a memory act and which has no judgment element, which never occurs in imaginings.[1] It is the feeling of familiarity.

If the results obtained from the separate discussion of memory acts which involve judgments and those which do not are adopted as they stand, and if members of both classes of memories exist, memories are to be defined to be the sum of two existent classes, whose determining functions are predicates having reference to a primitive judgment on the one hand and a feeling of familiarity on the other. Now an objection to this definition might be raised, on the ground that a feeling of familiarity and a judgment are very different in their nature. This objection might be met in two ways. We might try to identify a feeling of familiarity with a judgment of a certain form; but if we try to identify it with the judgment "This is something I have seen before" we are at once thwarted by the fact that this judgment occurs in

[1] This feeling occurs primarily in acts of recognition.

imaginings which involve no feeling of familiarity. This form of judgment was the most hopeful one to try, and I therefore suspect that it is impossible to identify the feeling with any form of judgment.

But I would try to meet the objection in another way. I do not think that it is unsatisfactory to define a class of phenomena such as memory acts as the sum of two classes whose determining functions are predicates having references to things of a very different nature; and I think that anyone raising the objection we are endeavouring to meet, would say in effect that memories must have in common a property which is "genuinely one property". The objection would then be that a feeling of familiarity and a judgment are of very different natures, and that the property of *involving a feeling of familiarity or at least one primitive judgment* is therefore not genuinely one property. In some sense some properties are "genuinely one property" and others are not. Take, for example, a hat, a coat, and a rabbit. They have in common the property of being (a hat, a coat, or a rabbit). But this is not genuinely one property. But it must be remembered that memory acts are a class of occurrences grouped together in one's mind just as planets and fears and apples are phenomena grouped together in one's mind. Very often, though one is quite definite about the mental grouping of most phenomena, there are certain border-line cases which one feels might belong to either of two groups. In dealing with these within one group or another some arbitrary element is introduced. This consideration does not prove that there is not at the root of every grouping of the kind one genuine property; but by the principle of inverse probability[1] since the probability that the boundaries of our groupings of phenomena would be vague on the assumption that there are no real properties at the basis of these classifications is greater than its probability without the assumption, it adds to its probability. There seems then to be no reason for holding that at the root of every grouping of this kind there is a property which is "genuinely one property" common and peculiar to all the phenomena. I think, therefore, that though the assumption on which the objection is based that the natures of a feeling of familiarity and a judgment are different must be allowed to be probably true, that the

[1] If h is the sum of propositions relative to which we are considering this problem and x/y means the probability of "x on the assumption y" the principle of inverse probability states that $a\ h.\ b/ah = b/h.\ a/bh$. If then a increases the probability of b so that $b/ah > b/h$ then b also increases the probability of a.

principles at issue must not be accepted without further investigation.

If memories which do not involve judgments exist, the definition stands in terms of the judgment element in memory acts which involve judgments and in terms of the occurrence of a primitive judgment in those memory acts (if there are any) which do not involve judgments in terms of a feeling. But suppose we had adopted the converse procedure and had begun by the investigation of the feelings involved in memory acts. The feeling of familiarity occurs persistently in all memory acts which involve no judgments. But when we come to investigate the case of memories involving judgments we find that the feeling of familiarity still occurs. The question then presents itself: Could a division of memory acts and imaginative acts be obtained by reference to the feeling of familiarity? It has been done for memory acts which involve no judgment, since imaginings which involve no judgment, involve no feeling of familiarity. The answer to the question rests upon whether any imaginings occur which involve a feeling of familiarity.

In general, it is clear that no event in which a feeling of familiarity occurs is an imagining. But there is one exceptional class of cases in which it is not quite plain. We will go back to one of the examples of imaginings given earlier. I am looking at pictures of various places in a book and I am told that one of them is a picture of the place where I stayed at Christmas, 1910. I make an image of the place in my mind's eye and scrutinising it with some interest I make judgments among them: "They ought to know if this really is the place, so I suppose it must". But suddenly I have a feeling of familiarity and I say, "Of course! This is something I have seen before," and I probably make various other judgments, among them "it *is* a place I have seen before and I *was* there in 1910". Now this case is interesting in several ways. At the beginning we clearly have an imagining and at the end a memory. In the memory the judgments of the form 1 and 2(*b*) occur and there is a feeling of familiarity. We are fairly confident that it cannot be a case of memory if neither of the judgments is primitive; yet there is a feeling of familiarity. Now in the judgment I was about to make "It must be the place where," the word "must" shows that it would have been a derived judgment. The judgment "It is something I have seen before," however, was not derived. It is causally connected with the various judgments I have already made, but it is not inferred from any of them. The nature of inference is not

clear, but it is at all events obvious that to infer from A to B is not to be identified with A causing B. Here in the cases of which this example is representative we get the same result as before: namely, that feelings of familiarity do not occur in imaginings.

VI.

This conclusion, then, enables us to substitute a simpler definition of memory acts. We will call an act a memory act if it is an image act and involves a feeling of familiarity. The fact that all memory acts involving beliefs involve at least one primitive belief can then be stated as a separate result.

The epistemologist, of course, will be more interested in those memory acts which involve judgments than in other memory acts. Among these memory acts the greater number are of the forms 2 and 4, and for the most part in memory there is no reference to the past perceptions of the subject in the judgment. The cases 1, 2, and 5 are then comparatively unimportant. And even among these it will, I think, be the memories of events which are in some sense more important for a theory of knowledge than the memory of physical objects. We shall get then to acts involving beliefs such as: "It happened like this" or "this is how it happened" (where *this* refers to an image). And it is memories of this kind that give us knowledge of the past. Other aspects of memory besides the judgment aspect seems to present interesting features; but memory is particularly important in the knowledge it gives us of the past. If our conclusions are correct, to allow that memory *ever* gives us knowledge of the past will involve us in allowing that sometimes one knows directly a proposition having one or other of the forms 1, 2, 3, 4 or 5. And it is, I think, always interesting to discover the forms of propositions which are directly known.

Linking up our investigations with the question of how knowledge of the past is possible, we see that memory is one of the bases of knowledge. This must be our excuse for treating in detail the judgment aspect of memory, which is the aspect most intimately connected with memory when it is looked upon as a means of obtaining knowledge of the past. But it also shows that very many other problems, and in particular the problem of truth and error in memory judgments, need discussion before the full epistemological importance of memory can be assessed.

IV.—DISCUSSIONS.

THE CATEGORIES OF BIOLOGICAL SCIENCE.

The man of science who knows nothing of philosophy is wont to regard all valid generalisations as truths of equal value in the scheme of the Universe. But the metaphysician knows that there are degrees of truth just as there are degrees of reality, and that the concepts and terms of the different sciences may belong to different levels of thought or planes of comprehension, and represent varying degrees of abstraction. The controversy has recently arisen as to whether the categories of biology are ultimately reducible to those of chemistry and physics, and Prof. Pringle-Pattison[1] amongst the philosophers and Dr. Haldane[2] amongst the men of science answer the question in the negative, affirming that biology is an "autonomous science" with the right to its own conceptions and terms which need not and cannot be replaced by those of the inorganic sciences.[3] Life, it is affirmed, can only be interpreted in terms of life, just as mind can only be interpreted in terms of mind. It is obvious that the categories of biology or physics are inadequate for the elucidation of mental phenomena. So, similarly, in seeking to explain the nature of the living organism, the more abstract sciences are insufficient for an interpretation.

It is proposed in this article to consider the subject critically and to deal with the question whether it is possible profitably to carry on biological research and to aim at making biological generalisations without perpetual reference to the methods and categories of the inorganic sciences.

A little consideration is sufficient to convince one that the categories of biology are not all precisely of one kind. Formerly, biology—or as it used to be called, natural history—consisted for the most part of mere description. The older naturalists dealt with what they thought to be concrete reality. The animals and

[1] A. S. Pringle-Pattison, *The Idea of God in the Light of Recent Philosophy*, Oxford, 1917.

[2] J. S. Haldane, *Mechanism, Life and Personality*, London, 1913; *Organism and Environment*, New Haven, London and Oxford, 1917; *Life and Finite Individuality, A Symposium*, London, 1918; *The New Physiology*, London, 1919.

[3] As Prof. Pringle-Pattison points out (*loc. cit.*, p. 94) this idea is quite simply (but dogmatically) expressed in J. S. Mill's *Logic* (Book III., chapter 6).

plants were created each after its own pattern, and hypotheses about origins and relationships hardly existed. As Mr. Bateson says, "in the old time the facts of nature were beautiful in themselves and needed not the rouge of speculation to quicken their charm. But that was long ago, before Modern Science was born."[1] For the men of that time it was sufficient to observe the endless variety of nature and to find it very good. They contemplated what seemed to them to be actuality, which in all its manifold variety testified to the glory of God and the wonderful working of the Divine Intelligence. For them nature was not blind but contained an essential element of purposiveness which was ever present and reflected the mind of the Creator. In those days the æsthetic interest dominated in biology (which in the modern sense was not a science), and it expressed itself largely in the grouping of characters and processes in relation to their qualitative resemblances.[2]

With the growth of evolutionism the historical interest developed, and apart from the adoption of a generalisation which assumed the connexion of all life, there was the satisfaction in following the successive changes of organic form and so leading up to human existence as we know it at present. With the acceptance of Darwin's views as to the origin of new species a powerful impetus was given to the movement towards a mechanistic philosophy of the Universe,[3] and the biologists of the latter half of the nineteenth century, in common with most other men of science, looked forward confidently to the time when the whole range of phenomena would be shown to be governed by natural laws of equal validity. In philosophy, positivism and agnostic realism were the dominant schools of thought, and little account was taken of the idealism of Hegel and the older metaphysicians.

But even in the seventeenth and eighteenth centuries, long before the movement in favour of naturalism had set in, the physiologists were at work providing chemical and physical interpretations of vital phenomena. The observations of Cesalpinus and Harvey led to a physical and mechanical explanation of the circulation of the blood. Borelli applied the laws of mathematics and physics to muscular movement, and was so successful in arriving at mechanical explanations of organic processes that others adopted his methods though not always with equally satisfactory results. Boyle, Hooke, Lower and Mayow, in the

[1] W. Bateson, *Materials for the Study of Variation*, London, 1894, p. vii.

[2] *Cf.* A. E. Taylor, *Elements of Metaphysics*, London, 1903, p. 287.

[3] Nevertheless teleological factors have generally been held to be partly accountable for organic evolution, *e.g.*, the Lamarckian principle of the inheritance of acquired characters, and sexual selection (*cf.* J. Ward, *Naturalism and Agnosticism*, vol. i., London, 1899, p. 278); to these we must now add Eugenics. The operation of these factors depends upon the apparent power of the conscious organism to interfere with the course of nature. See below, p. 71.

seventeenth century, and Black, Priestley and Lavoisier in the eighteenth, carried out experiments by physical and chemical methods which laid the foundations of our modern knowledge of the physiology of breathing. At an earlier date van Helmont founded the study of biochemistry. By the time that Darwin's theory of natural selection had been generally accepted as accounting for the evolution of new adaptations in accordance with natural laws of heredity and development, it seemed as if mechanical principles would triumph in the whole domain of scientific and philosophic thought.

Those who adopted the vitalist position and held it necessary to assume that life possessed some special attribute which distinguished it from non-living material, were in essence no less mechanistic in their philosophy than the avowed mechanists, since they merely postulated an additional mechanistic principle. Thus the vitalists, while raising no objection to chemical and physical interpretations of organic processes, held it necessary to suppose in addition that a living organism was endowed with a special force which enabled it to preserve its independence without violating any of the laws of the inorganic sciences. Such a vital force was believed to be capable of acting only in a suitable chemical and physical environment, and if the external conditions were sufficiently abnormal the force ceased to act, and the visible sign of the failure was the death of the organism. Moreover, the vital force whereby an organism was enabled to continue its separate existence, having once been destroyed either by a process of general decay or through the adverse action of external circumstances, could not be revived. In other words, for the vitalist, abiogenesis was an impossibility. And in support of the vitalist position there is the undoubted fact that abiogenesis or the evolution of life from inorganic matter has never been observed.

For the mechanist, on the other hand, abiogenesis has always been regarded as theoretically possible, and various attempts have been made in the laboratory to produce living organisms from inorganic matter in which the germs of life were known to be previously absent. The controversy between the mechanists and the vitalists, between those who asserted that life must have arisen by evolution from non-living matter and those who denied this possibility, has broken out from time to time amongst men of science, but so far there has been no satisfactory solution to the question whether there is any essential distinction between inorganic and organic phenomena. Amongst the philosophers, however, the problem has been regarded in a different light.

For Lord Haldane,[1] Prof. Pringle-Pattison and Dr. Haldane, the question between the mechanists and the vitalists is improper or meaningless; it is one which cannot be answered because it ought not to be put. Instead of asking whether living beings can be evolved out of lifeless ones they enquire whether the categories

[1] Viscount Haldane, *The Pathway to Reality*, vol. i., London, 1913.

of biology can be reduced to those of more abstract sciences, and we have already seen that they answer the question in the negative. Biology, they tell us, requires its own terms or categories, which belong to a higher level of thought than those of chemistry. Prof. Pringle-Pattison has developed his conceptions in a remarkable chapter on "The Liberating Influence of Biology,"[1] in which he claims the support of modern physiological science. To my mind it is a confession of weakness on the part of the philosopher that he needs such liberation, especially if it is one brought about by misunderstanding the position of the vast majority of those who are, or have been, occupied in biological investigation. Prof. Pringle-Pattison can justly claim the support of Dr. Haldane, and perhaps also of the general trend of opinion amongst the biological metaphysicians such as M. Bergson, but apparently he does not realise that the conceptions and methods which are habitually and effectively employed by the student of animate nature are still those of the "old guard".

"The phenomena of life," says Sir Edward Sharpey Schafer, "are investigated, and can only be investigated, by the same methods as all other phenomena of matter."[2] In the preface to a recent work covering the whole field of "General Physiology," Prof. Bayliss quotes with approval the following words of the great French physiologist, Claude Bernard :—

"There is in reality only one general physics, only one chemistry, and only one mechanics, in which all the phenomenal manifestations of nature are included, both those of living bodies as well as those of inanimate ones. In a word, all the phenomena which make their appearance in a living being obey the same laws as those outside of it. So that one may say that all the manifestations of life are composed of phenomena borrowed from the outer cosmic world, so far as their nature is concerned, possessing, however, a special morphology, in the sense that they are manifested under characteristic forms and by the aid of special physiological instruments."[3]

Prof. Loeb has just published a new monograph[4] which is an extension of his former work on the movements of the living organism, and the aim of it is to show that those movements are of the nature of tropisms and can be dealt with by the quantitative methods of the physicist. The extensive work of the same physiologist on the fertilisation of the ovum as a chemico-physical process is another illustration of the rapid progress which has been made by utilising methods which are now habitual among biological workers. Again, Prof. D'Arcy Thompson's recent book entitled

[1] And in the following two chapters.
[2] E. S. Schafer, *Presidential Address to the British Association*, 1912.
[3] W. M. Bayliss, *Principles of General Physiology*, London, 1913.
[4] J. Loeb, *Forced Movements, Tropisms and Animal Conduct*, London, 1919.

Growth and Form[1] is an example of the application of mechanistic interpretation to the facts of morphology.

The perusal of any current physiological journal will supply numerous other instances of the way in which biological study is being advanced by the use of chemical and physical methods.

But Dr. Haldane is not satisfied. "Somehow or other," he says, "a living organism never seems to be a mechanism, however often it may be called one."

Presumably Dr. Haldane is here speaking as from the standpoint of the "plain man". But what a thing seems to the plain man, who is a naïve realist, has nothing to do with the question. A lump of chalk to the plain man does not seem to be a combination of calcium, carbon, and oxygen; at least that is not his ordinary idea of what it is, no matter how clearly chemistry may prove that chalk is so composed. Still less does it seem to him to be a collection of electrical corpuscles in a state of rapid motion, however much the physicist may tell him it is so. Further, to the artist or to the poet an object of nature may mean much more than it does to a man who has no 'eye' for beauty. So, too, an animal, for a farmer or a live-stock expert, judging cattle at a show, is very different from what it is to a biologist who deals with life at another level. And again, to a doctor practising the art of medicine, the life of his patient may be something much deeper and fuller than it is for one with no interest in the medical profession. These instances involve no contradiction; neither is there any inconsistency in the view that for the physiologist, pursuing his own line of study, the living organism is just an intensely complicated mechanism and nothing more.

Dr. Haldane proceeds to argue further that because complete physico-chemical explanations of physiological processes are apparently more remote than they seemed to be in the middle of the last century, therefore the mechanistic hypotheses of organic nature are a failure. It would be as legitimate to contend that all research is a failure, since it is a truism that every investigation opens up further fields of inquiry, and so on to the indefinite regress. As Goethe said:

> "Da muss sich manches Räthsel lösen
> Doch manches Räthsel knüpft sich auch".

But Dr. Haldane does give certain definite illustrations of physiological processes which appear to go on in defiance of physical laws, and the most noteworthy is that of the secretory function of the epithelium of the lung in the higher vertebrates and of the air bladder in fishes, which instead of merely permitting the diffusion of oxygen as a non-living membrane would, is able, when needful to the organism, actively to push oxygen inwards contrary to the mechanical laws of osmosis. A friend of mine who is a physicist assures me he could conceive of more than one way in which this

[1] D'A. W. Thompson, *Growth and Form*, Cambridge, 1917.

might happen without violating the laws of physics. At present we are ignorant of the explanation of this particular phenomenon, just as in the past we have been ignorant of the nature of many other vital processes which are now understood. Moreover, Dr. Haldane's position in regard to the matter is hardly different from that of the orthodox vitalists.

In what he has written about the mechanistic theories of heredity Dr. Haldane seems to me to be on firmer ground, and I am in agreement with him in some of his criticism. But to my mind the real difficulty about the older theories of inheritance (whether they concern gemmules, stirp, germ plasm, or any of the other substances which were supposed to contain carriers of heredity) is that they do not fulfil the conditions of a true scientific hypothesis. The primary object of science is to reduce the course of events to laws of uniform sequence, and so to facilitate prediction and an interference with the course of nature for the specific purposes of man. A law of nature as embodied in a scientific hypothesis, in order to be valid, must enable one to predict, not with absolute certainty, but with a reasonable degree of assurance. And as Mr. Bradley says, "in order to understand the coexistence and sequence of phenomena, natural science makes an intellectual construction of their conditions. Its matter, motion and force are but working ideas, used to understand the occurrence of certain events."[1] The same idea has been expressed by a distinguished physicist who affirmed, though I have never been able to verify the reference, that a law of nature is not a statement of fact but of policy. A sound policy having been adopted, the things we expect are the things that come about, but to the question why this is so, science has no answer.

Now all the older theories of heredity are alike in the following two respects. In the first place, there never has been any direct evidence that the material of heredity is transmitted in any of the variety of ways postulated, and secondly, none of these hypotheses enabled one to predict phenomena which could not otherwise be predicted as a result of ordinary experience. It has always been known that like tends to beget like, that the offspring for the most part resemble the parents and to decreasing degrees the grandparents and ancestors, while the most that could be said in favour of certain of the older theories of heredity was that they supplied vague and uncertain explanations of reversion to an ancestral type as a result of cross-breeding, and of the fixity of type produced by inbreeding, facts which were also known and consequently could be predicted as a result of ordinary experience and without recourse to any theory of heredity at all.

Such criticism, however, does not apply with the same force to the Mendelian theory of heredity, the discovery of which marked a new epoch in the history of the subject and has given rise to a new branch of knowledge, the science of genetics. This is not the

[1] F. H. Bradley, *Appearance and Reality*, London (6th impression), 1916, p. 283.

place to refer to the important discoveries to which this theory has led, and here it will suffice to point out, first, that it differs from the older theories in affording a means whereby the facts of inheritance can be predicted in a form more definite and precise than heretofore, and secondly, that the explanation of the phenomena is to be found in the working of the ordinary laws of probability as they apply to the *chance* matings of gametes or reproductive cells which are believed to be of different kinds corresponding to the characters of the organisms to which they give rise, these different kinds of gametes being produced in definite mathematical proportions. The explanation underlying the Mendelian theory of heredity is a purely mechanical one and contains no teleological element. Moreover, students of genetics have never concealed the belief that the Mendelian theory of unit factors distributed amongst the gametes is something more than a mere analogy to the atomic and molecular theories of chemical science, and that this hope will be justified by the advance of chemical physiology.

Dr. Haldane's main objection to mechanistic theories of heredity is that they assume the existence of a germ plasm of inconceivable complexity, and that it is impossible to see any glimmer of explanation of the facts which they are intended to elucidate. This is again the argument from ignorance, and moreover there are hints, few and far between it must be admitted, as to how further advance may be made. By the union of the spermatozoon with the ovum two effects are produced. First, there is the fertilisation effect which Prof. Loeb has shown can be imitated by physico-chemical means, and secondly, there is the hereditary effect. Now Prof. Hertwig has shown that the spermatozoa of a frog, if acted upon by radium, may lose their power of hereditary transmission while retaining their capacity to effect fertilisation. Here we have a case of the mechanism of inheritance being thrown out of order by physical action and without causing the death of the reproductive cell. And if the hereditary functions can be inhibited by physical factors, it is surely not outside the bounds of possibility that they may be regulated by such means. As Prof. Punnett says, one day "out of some wild laboratory experiment there may flow a stream of new forms of living things".[1]

Dr. Haldane complains that mechanistic theories do not help him in his science. "If we are to get a grip of biological fact," he says, "—the grip which enables us to predict—we must always keep the whole organism in view," we must deal with life in terms of life. Here I challenge Dr. Haldane. Can he put forward any purely biological or teleological theory of heredity which will conform to the conditions of a true scientific hypothesis in enabling one to predict what otherwise could not be predicted? Or, to repeat my challenge in a more general form, will Dr. Haldane, by

[1] R. C. Punnett, *The Future of the Science of Breeding* (in *Animal Life and Human Progress*, edited by A. Dendy), London, 1919.

specific illustrations, explain how the adoption of exclusively biological categories is going to assist us in advancing investigation?

I yield to no one in admiration for Dr. Haldane's work upon the physiology of breathing, but this same work seems to me to be a remarkable illustration of the ever-increasing adequacy of the physical and chemical categories in the interpretation of organic phenomena. To my mind there is nothing gained for biological research by seeking to interpret life in terms of ends or purposes.

But I must not misinterpret Dr. Haldane. Neither he nor his brother, Lord Haldane, find in life as such the purposiveness of the conscious organism: they repudiate the need for introducing into biology categories which belong properly to mental science, but nevertheless they continually utilise such expressions as "quasi-purposiveness," and they tell us of activity according to *requirements*, and such conceptions they regard as necessary for the proper understanding of the living organism.

"To the question why living organisms behave as they do," says Dr. Haldane, "the only answer is that it is part of the nature of reality that they do so."[1] Such a way of regarding vital phenomena seems ill-calculated to advance our knowledge of the organism, and this after all is the object of biology.

What would it have profited if Prof. Loeb, in treating of fertilisation, had started on the assumption that a physico-chemical theory was improper or irrelevant, and had, as an alternative, put forward some vague generalisation, such that the sperm and ovum are actuated by an inherent purposiveness which induces them to adjust themselves to one another, thereby acquiring a new vitality, to the end that a new generation might be produced? This is hardly a caricature of the method which Dr. Haldane advocates, but which, to the great advantage of physiology, he does not seem to carry out in his own work. To my mind, if his way of regarding the matter were adopted, it would lead to the stultification of biological science. Here I am in agreement with Prof. D'Arcy Thompson who in his contribution to the Aristotelian Society's *Symposium*[2] has anticipated me in part of my criticism. Putting aside the aesthetic and historical interests of biology as extra-scientific, and medicine, which is an art as well as a science, biological investigators in general find the categories of chemistry and physics to be sufficient for their own studies. The introduction of teleological conceptions in biology serves only to produce that very confusion of the categories which the brothers Haldane so strongly deprecate.

The standpoint of the man of science is that of phenomenalism, which, as Mr. Bradley says, "is useful and quite necessary, and the metaphysician who attacks it when following his own business,

[1] J. S. Haldane, *The New Physiology*, London, 1919, p. 125.

[2] D'A. W. Thompson, *Life and Finite Individuality, A Symposium*, London, 1918. See also his review of *The New Physiology*, MIND, July, 1919.

is likely to fare badly".[1] Later, in the same book, the author expresses something more than a doubt as to whether we may suppose ends operate in nature except "in finite souls and in volition".[2] And further on I read, "Every special science must be left at liberty to follow its own methods, and if the natural sciences reject every way of explanation which is not mechanical, that is not the affair of metaphysics. . . . And this question of the operation of ends in Nature is one which, in my judgment, metaphysics should leave untouched." Thus, the man of science who finds a mechanistic view of the Universe sufficient for his working needs is in agreement with the greatest living master of idealistic philosophy.

Are the categories of biology reducible to those of the inorganic sciences? To my mind the answer turns on how we reply to the question, what do we mean by biology? Do we mean the biology which is known to the worker in the laboratory and the observer in the field, or do we mean a biology which abstracts less and includes much more, which embraces all the categories of psychology as well as those of teleology and the more concrete forms of knowledge, which inquires into the purpose of things and their relation to the ultimate reality? If this is what we mean by biology, it is no part of natural science, and its relation to the limited field of inquiry which the scientific worker knows under the same name is in its essence no different from its relation to chemistry and physics and mathematics or any other branch of natural knowledge. All of these sciences deal with abstractions, and teleology has no place in any of them. The study of mind and consciousness is no part of ordinary biological science. Here we must pass to a higher category in which teleological conceptions are not only permissible but are indeed necessary. In psychology the categories of causation are insufficient. Mind cannot be interpreted in terms of life.

Against teleology in its proper sphere I have nothing to say, but I cannot see why the phenomena of life, considered apart from consciousness, should be selected as a more appropriate field for teleological interpretation than the rest of the material universe. The apparent association of life with consciousness in man and in the higher animals has probably been largely responsible for this confusion of the categories.[3]

[1] Bradley, *loc. cit.*, p. 126. [2] *Ibid.*, pp. 495-497.

[3] It is of course true that physiologists sometimes speak of the purpose of an organ when they mean its function or use, in the same way as we may speak of the purpose of a particular part of a machine. So also they may speak of increased fecundity as being the purpose of polyœstrum (or the recurrence of the sexual periods within a single breeding season) when they mean that this condition or habit has developed on account of its survival value. But this is not a true use of teleological categories; it is merely the adoption of a teleological mode of expression for purposes of abbreviation. In explaining how polyœstrum is brought about physiologists employ the category of causation. Modern physics, however, appears to have gone a step further in the direction of abstraction and has aban-

One of the greatest difficulties which confronts us in attempting to think out a universal scheme is the apparent power of the conscious organism to interfere with and alter the course of nature. It may be that here we have a hint that mind and the material universe are not diverse, but that if we could transcend the level of thought which is normally ours the disparateness would be resolved. At present we seem to be confronted with a hopeless duality, which in our finite life we may never more than partially dispel.

Yet even here there is no need for us to despair. Since the time when our mentality was at the level of that of the lower organisms we have advanced much both in knowledge and in understanding. Is it impossible that in the progress of the future, and even in finite existence, we may learn proportionately more?

> "For men have hopes which race the restless blood,
> That after many changes may succeed
> Life which is life indeed."

Surely with the coming of that life our knowledge will be transcended.

doned the notion of cause, substituting for it the conception of functional relation. (See Bertrand Russell, *On the Notion of Cause*, Presidential Address to the Aristotelian Society, 1912, reprinted in *Mysticism and Logic*, London, 1918.) Prof. Pringle-Pattison, therefore, is not quite correct in regarding the idea of cause as lying at the basis of scientific knowledge, though the substitution for it of the conception of functional relation would not seem to affect his argument (*The Idea of God*, p. 101), which is to insist on an essential distinction between the mentality of man and that of the lower animals.

F. H. A. Marshall.

IDEALISM AND THE EXTERNAL WORLD.

Prof. Pringle-Pattison's important article in the January Mind, and Mr. Richardson's paper in the same number, raise a question to which I venture to draw attention. The point is whether idealism, taken either in the sense of Prof. Pattison or in that of Mr. Richardson, is able to yield a satisfactory interpretation of the world of external experience. The reaction in recent years to some form of realism is a token of dissatisfaction with current idealistic theories. And, perhaps, in this connexion it may be worth while to indicate some objections which idealism has to meet.

Let me begin with the view of the outward world set forth by Prof. Pattison in his Gifford Lectures and in the article referred to. So far as I can see his theory here has much in common with that of Dr. Bosanquet (*Individuality and Value*, p. 361 ff.). The Berkeleyan type of idealism is rejected, and a clear distinction is drawn between existing 'in a mind' and 'for a mind'. Hence a 'thing' is not identified with a 'form of conscious experience,' which is described as mentalism. On the other hand, the Kantian figment of the unrelated 'thing in itself' is condemned. So far we have a doctrine for which the name 'natural realism' might seem applicable. But Prof. Pattison warns us that his view is not to be taken as implying that the external world presupposes a system of independent existences; and he falls back on the idea of the 'essential relatedness' of matter and mind, nature and spirit. Nature, we are told, is *organic* to mind, and the material world in the end falls within the scope of the larger idealistic principle of the centrality and supremacy of mind.

Here we seem to have the theory that the nature of the material is solved by regarding it as organic to mind in that wide sense which it is sought to distinguish from mentalism. The use of the word 'organic' in this reference is suggestive, and conveys a helpful thought; but one may doubt whether the problem at issue is to be settled in this convenient way. To insist on the process of idealistic construction by which the socialised mind builds up the world of common experience is right and important, but the process involves data that are interpreted and not made. To construe there must always be something to construe. Nor can it be gainsaid that the world existed long before man appeared to begin the constructive work. If this be so—and it seems idle to deny if—some further explanation is needed of the sense in which nature is relative to mind. It cannot, one would suppose, mean

that nature is an unreal abstraction apart from the collective thinking of humanity. Prof. Pattison argues against substantiating the earlier stages of a process in isolation from the later and culminating stages, the stages which really give what goes before its meaning and value; and in this connexion he speaks of the world as organic to the self-conscious reason first revealed in man. But to say that the world receives its higher interpretation through human reason is not to prove that there was nothing to interpret before man appeared to undertake the task. To meet this difficulty it might be said that nature is organic to the Divine Reason, in other words, essentially related to it. One would wish to know whether nature falls wholly within the Divine Experience, or whether it is in some sense other than that Experience, though always dependent upon it. Obviously the stress of this problem will be felt differently by those who hold finite spirits have a substantive and by those who maintain they have merely an adjectival existence.

On one point Prof. Pringle-Pattison is quite decided: he does not think that monadism provides any real solution of the question. Monadism appears to him to yield no explanation of the environment necessary for the interaction of minds. Some years ago I urged the same difficulty (*Phil. of Religion*, pp. 452-3). On the other hand, if a theory of monads does not furnish a full explanation of the experienced world, it may very well be a factor involved in the explanation. The trouble no doubt is with the 'bare monads'. The idea of the 'bare monad' is a limiting conception: it denotes the point where we reach the ultimate and simplest form of individuality. Yet the bodiless entity called the naked monad is a psychical centre of experience, however low its grade, and it has the self-centred character that constitutes an individual. And the issue before us is, Can this multitude of psychical entities form the basis of what psychologists call the presentation-continuum? Mr. Richardson in his article (p. 63) says the notion of the bare monad is by no means impossible. But even were this true, it would not be relevant; for what he does not show is, that these monads are an adequate explanation of the world given in sense-perception. Those who find monadism sufficient usually lay great stress on the work of conceptual thinking, as developed and matured by inter-subjective intercourse, in giving us the conceptual world of things in space. Mr. Richardson, for instance, boldly says that physical objects are "conceptual constructions based on sense experience, and therefore have a purely formal existence". And of course if this is a true proposition, *cadit quæstio*. But many of us will find insuperable objections to it. What one desiderates is not assertions but cogent reasons: in other words, some clear evidence how, out of a basis in bare monads, a soul or 'dominant monad' can elaborate the conception of related objects in space. Here, I think, we may assume that the Kantian view of space is unworkable: a form of intuition read into sense-data can never explain

the localisation of objects in space. If this be so, the monadologist must show how from his data in primitive monads this elaboration of a coexisting order of things is possible. And here he must be careful not to assume that his data contain more than they really do, as, for example, that because they are a multiplicity of individuals they supply the ground for a coexisting order of elements. For they are not points or entities existing alongside one another, but merely centres of experience at the lowest level. Nor is it easy to see how the presence of elementary monads as data to an experient subject gives rise to the conception of things at all, for the experience of monads is only the experience of other experiences, and it is not evident how this can be hypostatised into things.

A little further examination will make the difficulties inherent in the hypothesis still more clear. Here I venture to repeat an argument I have already advanced (*Phil. of Religion*, p. 452). Suppose we have a presentation-complex involving the real relatedness of its elements, which we may symbolise as aRb. As presented to the percipient subject S. this may be denoted by the formula $a'Rb'$. Here, be it remembered, the terms and their relationship are taken as intrinsic, *i.e.*, not as arbitrary or external to one another. Now on the monadistic hypothesis the relationship R. of a and b can only be qualifications in the elements a and b induced by their connexion or interaction; and when they take the form for S. of $a'R.b'$, there is nothing to show why S. should envisage this relatedness as the coexistence or togetherness of a and b instead of a causal succession between them. For *ex hypothesi* the basis of the relation $a'Rb'$ is nothing more than experiences in a and b. The point of the difficulty is apt to escape us, because we surreptitiously assume that the coexistence or togetherness of the elements or terms is somehow a datum and is cognised as such by S. But if we keep strictly within the limits of the theory with which we are working, the conclusion seems inevitable that there is something in the coexistence of the elements in a presentation-complex that has not been explained in terms of monads, or inner centres of psychical life which have only duration.

Monadism is valuable in helping to interpret the evolution of experience from its lowest to its highest forms. But if the foregoing argument is sound, then the ideal side of experience has to be supplemented on its real side. Moreover, as already stated, the interaction of the hypothetical 'bare monads' must be explained. Leibniz was no doubt consistent with his premises in denying interaction, and in tracing all experience to the development of the inner life of the monads: but he achieved consistency at the expense of introducing an intolerable artificiality into his system. If we discard his solution, we must accept interaction and try to understand it. The explanation of Lotze suggests itself at this point; yet, if his theory be admitted, it is impossible to maintain the substantial existence of finite selves: in the end they are

reduced to adjectives of the one Real Being. For those who find insuperable difficulties in this reduction another alternative appears to be open; it lies in emphasising the realistic basis of experience, while still asserting its essential relation to the ideal side of experience. There is no adequate reason for taking the monad as the lowest level of reality. Let the conception of naked monads be discarded, for even the lowest centre of experience has a real side, a side which lies beyond the level of individuality. Monads so long as they remain monads cannot become confluent. A continuous real environment must be posited in which all monads share, in which they interact, and from which they are differentiated and distinguished from one another as centres of inner experience. This continuous real being would furnish the condition for the psychological experience of extensity as well as for the more developed idea of coexisting and interrelated elements in a presentational whole.

Of course, various objections and criticisms might be urged against a theory like this. How far all of them could be successfully met I am not certain. But it may be worth while to make some further explanations, in order to guard against possible criticisms which are based on misconception.

(1) Matter, in the commonly accepted sense of the word, this basis of experience certainly is not. It is essentially related to experience, though it is not to be construed as itself experience. It is more akin to the Platonic ὕλη which was 'the receptacle and the nurse of form'. And the intrinsic relation—or the inner teleological relation—in which it stands to the development of experient centres would also distinguish it from the Kantian figment of an unrelated 'thing in itself'.

(2) Again, it may be objected that this theory traces the genesis of psychical life to something which, if it is not matter in the crude sense, is at all events something lower than experience, and may be described as a kind of 'mind-stuff' that contains in itself all the promise and potency of mental development. Consequently, the theory is wrong in principle and fails entirely to account for the genesis of mind. So stated the argument is unanswerable; but it really rests on a misapprehension. The theory lays no claim to explain the genesis of mind in the sense of furnishing its sufficient reason. What it does seek to do is to offer an explanation of certain features in the experience of minds, notably the experience of a world of continuous and connected elements. The ultimate source of psychical life is neither to be found in that life itself nor in the basis out of which it emerges.

(3) The final source of psychical centres and of the medium in which they interact can only be found in God as the ultimate ground of all things. To Him must be traced the energising and quickening activity that brings to life and birth the variously graded realm of souls, souls which are rooted in the same real ground and by their manifold interactions build up the world of

common experience. And here the question arises how we are to conceive the relation of God to the realistic basis of psychical life. Certainly this basis must be absolutely dependent on God, and that in a sense in which it is not dependent on the thought of man. We may perhaps call it the creation of God, but the notion of creation is infected with misleading analogies drawn from this temporal and mundane experience. We are less open to misunderstanding if we construe the relation as one of intimate and vital dependence. On the other hand, to identify the basis of human experience with the thought or experience of God would only bring back on us the old difficulties in a slightly different form. We should still have to ask how the experience of another experience could serve as the means by which our conceptual world of objects is elaborated: and though the argument that Divine Experience is radically different from human may be true, it evades a problem by an appeal to the possibilities of something we do not comprehend. The objection that the view that has been outlined imports a radical dualism into the universe fails to take account of the complete dependence of the real and ideal sides of experience on one Supreme Ground or Will. In some sense the *other* of God, though always dependent on Him, the realistic basis on which mundane spiritual life evolves forms a mediating factor between the Divine Mind and finite minds: it forms the necessary medium in relation to which God brings into being the significant development of souls.

G. GALLOWAY.

THE NOTION OF A GENERAL WILL.

I RECOGNISE the courteous tone of Prof. Broad's rejoinder in the October MIND, and I will try to meet his criticism by my explanation. But I still maintain that the matter is sufficiently explained in my book, and better than I can explain it in a single paper.

I think that the root of disagreement between us is plain. I hold that my will, and any others which mine implies, or which imply mine, form a system which is general as against my will taken by itself. Prof. Broad does not admit that several wills can be the same, *i.e.*, can form *a* general will as compared with any one of them, unless they all consciously and explicitly will that the same propositions shall be true. He would not permit the use of such ideas as that I will what is implied in my will, or that my will is a particular within the system formed by other wills which imply it and are implied in it, as conditions *sine quibus non* of the truth of the propositions which it wills to be true. Just in a single reference, where by exception he asserts the reality of a will which is a system willed as a whole, he seems to give me a handle for an argument from his premisses.

For he describes Smith, stockbroker of Brighton, as possessing a system of connected volitions, which has organising principles in it. This is contrasted with Smith's various wants, and his efforts at various times to satisfy them, which are events in his history. I should call the system a standing will. I cannot spend space on Prof. Broad's suggestion of a way in which I might get, out of these facts, a contrast of a private and a general will. My point, so far, is simpler and less ambitious. I do not call Smith's will general as compared with particular in virtue of the contrast between the system of connected volitions and the various sporadic wants. This is not a case of a particular will compared with a unity of many such wills; though it has features analogous to such a relation. But I do draw attention to the point that the various wants are severally "abstract and fragmentary" as compared with the standing will. Imagine Smith's plans and ideas which form his standing will, and then think of such a volition as that of going up to town by train on a given morning. Is it not plain that the latter becomes a meaningless fragment if you strike out what he is planning to do? Certainly it is fragmentary, and I should say abstract as well, but that may be a verbal question.

Yet even here, before I go further, even at the level of Smith's

various wants, I must point out that in the instance I happen to have taken, if we argue strictly, a general will, at least relative, is implied. How can Smith will to go to town by train without willing the existence of the railway, the truth, that is, of thousands of propositions, the objects of other wills than his own, which must be true if it is to be possible for him to go to town by train? Obviously his will to go to town, if we are to be pedantically strict, involves the existence of thousands of other particular wills, which are to his as one general will to a particular within it, in the sense that they are directed to objects indispensable to the accomplishment of such volitions as his, while such volitions as his, in turn, are essential to the accomplishment of such objects as theirs. And this though none of the parties concerned may know of each other's individual existence.

But we may waive this argument. It may be said that it is artificial to treat a casual volition as directed to the conditions implied in it. If you take a cab, does your will imply a common element with the will of the cabman? A cab strike perhaps throws light on this question. But I need not insist on it.

I return to the standing will. By introducing this idea Prof. Broad has come a long way to meet me. When the standing will is granted to be real, it is difficult to deny the general will.

For such a system of connected volitions, bound together by organising principles, which, I take it, are considered to be willed more or less explicitly, is *ex hypothesi* comprehensive, and involves the planning of an entire individual life. Now this quite inevitably involves an immense system of implications, consisting in the operations of other private wills, whose objects are implied in those of the standing will first considered, and also imply them. We cannot say in such a case that the agreement between all the particular wills is only in a few abstract propositions, while their main bulk as private wills is unaffected by it. For we have accepted the conception of the whole private will in each case as a will connected throughout, and expressing principles which pervade it, more or less reflectively. It is quite inconceivable that such a system of connected volitions, at every turn implying and implied in other similar systems, should not form together with them a single inclusive system bound together by the nature of the propositions, not all identical, but necessary to one another's truth, which all the particular wills desire to be true. I confess this seems to me too obvious for argument. The man's plans and principles all depend upon the support of other wills, and, apart from such agreement, there is no feature of his life which he could possibly hope to realise. And his organising principles, by which he directs his whole life as a member of a community; they need not, certainly, be word for word the same as those sustained by other wills; but if communal life is to be carried on, they must support and be supported by those willed by others.

It seems to me, then, to be clear, that the standing wills of indi-

viduals must enter into a system which forms the standing will of the community. But because of the limitations which make each will a private will, limitations of our personal knowledge, character, and interest, each personal will is related to the whole body of wills as a particular element to a general system which includes it. The whole general will is explicit only in all the wills taken together. Each private will stops at a certain point, and, for what is beyond that, wills the whole by implication, or, so to speak, diagrammatically. I gave as examples of this before my own will for the restitution of certain provinces by Germany to France, and in favour of the League of Nations. My will to each of these objects is diagrammatic; it implies a concrete filling which it cannot supply, but which is present in the whole set of wills bearing on the subject taken together.

The question, then, how far the private will of a member of a community is an element within a general will of that community is ultimately the question how far you must be said to will what is implied in your will. It is a kind of question in which interpretations of fact are very likely to vary, and in which the actual facts are very hard to handle, owing to their enormous complexity and their perpetual movement. The reading which Prof. Broad affirms in his final paragraph seems to me, I confess, like the judgment of a looker-on who is not much interested in the game. But I quite admit that an extremist "evacuating interpretation" is a useful *terminus a quo* to work from in such discussions.

In opposition to this minimising interpretation I will make four suggestions, two in the way of removing hindrances to a more appreciative interpretation, as I consider it, of the common element in wills; and two alleging positive grounds for it.

1. There is no difficulty about willing subject to reservation. Many a man swears daily at the defects of his own house; but he wills to live in it as it is if he cannot cure them or get a better. We must not confuse what we will with what we should like. They are hardly ever the same. The point of this for the present purpose is that you must not reduce the agreement of wills to the residuum in which no distinctions survive. That is the old bad business of excluding from the generic concept all properties which are differently developed in the species. A socialist, and a non-socialist liberal, do not necessarily differ in their will for the immediate treatment of particular forms of property under existing conditions. To represent their relation truly you would have to explain in detail what they respectively wanted to see done, and with what alternatives under different conditions. Each of them wills what he thinks practicable, though he makes reservations for changing circumstances. Of course the whole set of wills is always changing, and is more or less in contradiction with itself. But all their contradictions spring from efforts at adjustment, and this character must be considered in estimating the unity of the will. One man is against proportional representation, and another in

favour of it, on one and the same principle, only they differ about the facts. Of course you must allow for this in estimating the unity of their wills.

2. A similar case is the relation of neighbourhood groups to the whole community. Are you to strike out from the general will the intense formulated public feeling in a locality in favour of public drink control, because it is not spread over the whole country? Surely not; as we allow local by-laws to have force of Acts of Parliament, so our own will to self-government implies our approval, under certain safeguards, of the public will of other localities. We will it, as I said, diagrammatically. It is even possible, and obviously usual, to support by our private will different arrangements in different localities, adapted to different conditions; and, in fact, this principle runs throughout our whole social and political life. This is an extension of what is involved when we say that Smith's organising principles pervade and connect his efforts to satisfy his various wants. The principle, though strikingly obvious in the case of neighbourhood groups, applies to occupational groups as well. The standing will of the community is actual in all these phenomena.

3. I attach very great positive importance to the will implied in conduct. Here again Smith's standing will is a parallel. I admit that the principle may be pressed too far, but I am sure, from its recognition by the practical world, from introspection, and from philosophical theory, that it has very great significance.

Ignorantia juris neminem excusat = practically "A reasonable man obeys the law without knowing it". His various actions reveal a will which in common with other particular wills throughout the community affirm the law of the land. "On the whole" his will supports the law, that is, the system of life which the law defines and protects. This is the judgment of the practical world in the maxim I have quoted. The fact that "on the whole" has different limits for everybody does not alter the fact that it is false of nobody. This is merely one, of instances, which, if set out, would cover the whole fabric of life. It meets the particular point of the participation of the less educated classes in the general will. But all the other instances would confirm it in this respect.

Introspection and philosophy I take together. I make bold to say, in virtue of both, that it is quite impossible to isolate a volition, as it is impossible to isolate a judgment. Every volition implies and is implied in a supporting system of wills, as every judgment implies and is implied in a systematic real world.

4. It is of fundamental importance to distinguish the true genesis of law and administrative order from the political chances which immediately bring them into application. An important law—an act of sovereignty or expression of the general will, in Rousseau's higher sense—has a growth like a great tree, both in time and in the area from which it draws support. The life-blood of hundreds or thousands of devoted lives is in it, and also the adjusting and

readjusting pressures of wills in the whole communal area or over great homogeneous districts of it. The easy-going publicist criticises it, of course, and very likely censures it, from a standpoint which has been won for him by the struggles and experience which moulded and are continually remoulding it. Think of the sincere and laborious lives and the innumerable counter-pressures and adaptations due to particular wills of every class which have gone to form our education policy, or our poor-law policy, or our policy about alcohol, or our commercial policy, or our local self-government, or our industrial organisation. (It seems an extraordinary thing to say that the "governing classes" have the directing power to-day, unless you make it a tautology by including in them all classes that *de facto* exercise control.) The Scottish fishwife says, "It's no fish ye're buying; it's men's lives". So we should say, when we think of our laws and institutions; they are not words and phrases, but the quintessence and utterance of men's and women's lives.

I adhere then to the statement that every reasonable private standing will in the community is related to the whole system of such wills as a component particular to a system which includes and defines it. The variations, through the correlation of which this whole is a system, are simply the variations of life, and the State, as a political structure, is an expression in outline, not really separable from the social whole, of the relatively permanent shape which the life of a community existing in all its particular wills, is maintaining and developing. I am sorry to have written at such length, but it is not a subject which it is easy to discuss shortly.

BERNARD BOSANQUET.

NEGATION IN TRADITIONAL AND MODERN LOGIC.

The traditional doctrine of negation is clear and simple. Judgments of identity, presence, inclusion, etc., are expressed in a propositional form which is affirmative (*A is B*). Judgments of difference, absence, exclusion, etc., are expressed in a propositional form which is negative (*A is not B*). There is an exact correspondence between propositional form, on the one hand, and the nature of objective relations apprehended, on the other. All judgments are positive, or apprehend genuinely objective relations; but of the objective relations thus apprehended, some are relations of identity, inclusion, etc., while others are relations of difference, exclusion, etc. The propositional forms in which these different relations are expressed all assert positively—all alike convey definite information which is objectively valid (*Roses are sweet, Thorns are unpleasant*). That is to say, negation is on a par with affirmation, or, as it is technically expressed, affirmation and negation are co-ordinate.

When, however, we come to "modern" logic—the logic of Lotze, Sigwart, Bradley, Bosanquet, Wundt, Erdmann, etc.—we notice at once that the naive faith in the validity and importance of the above distinctions has vanished, and that its place is taken by a far-reaching scepticism. It is no longer believed that we can speak of exact correspondence between propositional forms and objective relations, for it is no longer believed that we know what the objective relations are. It is no longer believed that judgments of identity, inclusion, etc., can be sharply distinguished from judgments of difference, exclusion, etc.—for careful observation seems to reveal elements of both identity and difference, inclusion and exclusion, in all judgments. It is, further, no longer believed that affirmation and negation are co-ordinate. The negative judgment is said to be a *Beurteilung*, a judgment about a judgment, a critical or reflective judgment, which expresses the scepticism of the modern man in the face of human attempts to apprehend the nature of reality. Its value is not objective, but subjective, bidding us refrain from the naive will to affirm, and to avoid dogmatism in any shape or form, in favour of the critical attitude, the *docta ignorantia* of Cusanus. The modern view of negation, then, is summed up in the statement that negation is subjective and indefinite.

If we consider each of these views by itself, we find in each something to which we could wish to yield assent. *This toothache is not pleasant; This car will not take you into London; I have not enough*

money in my pocket—about such judgments there is surely something objectively valid. And yet, on the other hand, we know that it is by the method of trial and error that we approximate to truth; that complete success does not crown our efforts in the field of ideal experimentation; that our every judgment is so infected with error that the sceptical, critical attitude is the only one tolerated by the scientific spirit. Both traditional and modern logic seem to be justified. And yet they appear to contradict each other. "Negation is on a par with affirmation, and is objective," says tradition. "Negation is not on a par with affirmation, and is not objective, but subjective," say the moderns. Can we accept both these positions, or are we faced with an unyielding contradiction?

I.

Let us approach the question by first of all investigating the relation of the propositional forms, affirmative and negative, to the judgment, *i.e.*, apprehension of objective determinations. Measurement assures me that there are certain differences in size between my study and the dining-room. Both rooms are equally high, but the walls of the study are not so long, the floor-space and ceiling-space are less, and there are certain other differences. Apprehending these objective determinations, I judge that there is a difference in size between the two rooms. How can this apprehension be expressed in propositional form? *The study is smaller than the dining-room; The dining-room is larger than the study; The dining-room and the study are of different sizes.* Such propositional forms all express the relation apprehended, and express it in a way which is "affirmative". But the same relation can equally well be expressed in propositional forms which are "negative": *The study is not as large as the dining-room; The dining-room is not as small as the study; The two rooms are not of the same size;* etc. In fact, considered as propositional forms, affirmation and negation appear to be interchangeable. They are rhetorical devices for producing a forcible impression, somewhat like interrogation or exclamation. They have different associational fringes, and in dealing with *A* we select negative expressions in order to provoke a certain reaction—a reaction which, in the case of *B*, would be produced more certainly by expressing our meaning—the same meaning—affirmatively. Whether our thought is subjective or objective in character, it can be expressed indifferently in affirmative or negative form, and in fine, at the propositional level, considered as linguistic devices for communicating our meaning, affirmation and negation can be regarded as alternatives, as "co-ordinate".

This conclusion, however, belongs to the use of language, rather than to logic. Are affirmation and negation mere linguistic alternatives, rhetorical devices for forcing others to attend to our meaning, or is there, perhaps, a sense in which the distinction

enters more deeply into the nature of our meaning itself? Leaving entirely on one side these surface-distinctions in the form of expression, let us inquire whether perhaps, deep down in the nature of thought itself, there are forms of *thought*, forms of *judgment* which can be classed as affirmative and negative.

What is the nature of judgment? Starting with a concrete situation, some problem presented to us primarily at the sense-perceptual level, we proceed by analysis to disentangle its various threads and then weave such of them as interest us into a new pattern which corresponds more nearly to the ideal demand for unity, consistency, and organisation. If our mental construction gives us some degree of mastery over the situation with which we started, so that we can see our way clearly, and can act accordingly, our ideal experiment has so far succeeded. We are in touch with reality, and our judgment is so far objective. But if our mental construction, however consistent in itself, and however logical it may seem to the eye of the intellect, cannot be applied in any definite way to the concrete problem, our ideal experiment has so far failed, and our thought is subjective, out of touch with reality.

So far we have treated judgment as though it merely furnished a specific solution to a specific problem; and if we are unduly under the pressure of immediately practical needs, it tends to be little more. But if we are subject to the *cacoethes philosophandi*, and have leisure to follow our thought whithersoever it leads, we notice at once that our various judgments are not cut off from one another with a hatchet, but exhibit a certain intellectual continuity. The threads of pattern *A* and the threads of pattern *B* appear to extend beyond the immediate organisation of sense-given material. There is a suggestion that they may form part of a wider pattern, and that our "practical" solution has after all gone only a little distance along the path which may, perhaps, be traversed by the philosopher. From this standpoint, it seems as though our judgment, although it may have furnished a rough solution for the immediate problem, is still far from perfect. It points beyond itself to a more perfect stage of judgment, in which its less profound viewpoint would be taken up and completed. The judgment of perception leads on to the judgment of experience; this again leads on to the symbolic judgment, the judgment of the scientist; and this, in turn, seems to point to something further, to the transcendent judgment in which Omniscience would embrace the content of all possible judgments in a single perfectly organised form.[1] So far as our attempts at judgment fall short of this final ideal, they are imperfect and subjective. So far as they attain the ideal, and concentrate upon the solution of their problems an intellectual context drawn from an ever-widening area of experience, so far they are objective.

[1] For a discussion of these stages of judgment, see a paper by the writer, "The Division of Judgments," in the *Journal of Philosophy*, etc., vol. xv., 1918, esp. pp. 548-550.

Let us examine a little further. Our human attempts at judgment move always somewhere between these two extremes. Experiences purely sensuous, wholly unilluminated by intelligence, are unknown to us. Our thought is never wholly subjective, but is at least in some degree intelligent, objective, in touch with a reality beyond the merely sensuous. On the other hand, there always remain, even in our most refined experiences, certain sensory elements which no effort of ours succeeds in transmuting into the most precious of intellectual metals. Our thought always retains a certain residuum of subjectivity, and so far we always fail to reach the goal of intellectual intuition, in which we seek the final solution of our problems. Our human thought, then, is neither wholly objective, nor wholly subjective, neither wholly a success, nor wholly a failure. It is successful in proportion as it is intellectual, and falls short of complete insight in proportion as it remains sensory.

Can we, in this brief account of judgment, discover distinctions which might reasonably be characterised as affirmative and negative? Let us consider. Negation is said to be subjective, and to register the failure of some ideal experiment of ours. Judgment, according to our account, is subjective so far as our reorganisation of the sensory data fails to bring us in touch with reality.[1] Can we, then, regard our more superficial judgments as so far negative, and our more scientific and philosophical judgments as so far affirmative? To speak more strictly, are we to treat all judgments as affirmative in so far as they bring us into touch with reality, and negative in so far as we fail of attaining a completely satisfactory insight?

Let us consider the case a little more closely. I construct the hypothesis that *A is B*, and attempt to verify it. Reality accepts the ideal suggestion. Well and good. My judgment, then, is affirmative. So again with a second ideal hypothesis—this time that *A is not C* (or is different from *C*). Here again reality accepts the suggestion. The second experiment also succeeds. My judgment that *A is not C* is also affirmative.[2] Let us examine further. I construct the hypothesis that *A is D*, or that *A is not E*, and attempt to verify it. Reality rejects the suggestion, and my experiment is a failure. My results are negative. I am thrown back upon myself, and have to devise further experiments in order to determine what is the relation of *A* to *D* and *E*. For the

[1] As, *e.g.*, when sensory elements are imperfectly apprehended—*e.g.*, in the construction, for a problem in simultaneous equations, of an equation which is not strictly representative of the data. If something vital is omitted, we are at once out of touch with reality.

[2] If reality is a system, in which each element has its own place, and is sharply distinguished from elements which occupy different places, then such a judgment as *A is not C* may be precisely as objective as such a judgment as *A is B*. In spite of the "negative" propositional form, such a judgment as *A is not C*, if true of reality, must be regarded as "affirmative" in the sense under consideration.

failure of my experiment tells me nothing about *that*.[1] I have failed, at least for the present. My results are negative. I succeed merely in discovering, like Socrates, my own ignorance.

Are we then to say that *A is D* and *A is not E* are negative *judgments?* Hardly. It seems more true to say that they are not judgments at all. We construct an ideal hypothesis, or floating adjective, and attempt to bring it into connexion with reality. If we succeed in establishing contact, we make a judgment. If we fail to make connection, our floating adjective remains a floating adjective, our hypothesis remains a hypothesis. We have constructed, perhaps, the predicate of a possible judgment, but unless we connect it with its subject, reality, our work is only half done—we have not judged. When we say, then, that our results are negative, we mean that we have not succeeded in judging. We are still in a state of suspense. *A is D* and *A is not E*, then, represent failures to judge, and from this standpoint we are forced to conclude that, while there may be such a thing as absence of judgment, there is no such thing as negative judgment.

Let us consider a little further, in order to become quite certain that this is the case. All judgment, so far as it *is* judgment, *i.e.*, so far as it succeeds in establishing contact with a reality beyond the act and thus interpreting reality itself, is positive. So far as we can really see our way through a question and think things out, we approximate to this ideal. Our human thought, however, is never entirely successful. So far as there remain in our thought elements which obstinately refuse to be taken up into the higher synthesis which reconciles their oppositions and places them in their proper position in relation to the rest of reality—so far our task remains incomplete. We have not fully organised our data. We have not judged. All our thinking, then, is only partially in contact with the real. So far as we succeed in thinking, in transmuting the data of sense into intellectual essence, so far we judge, and our judgment, so far as it *is* judgment, is positive. So far as this transmutation is not carried through, so far as our thought remains inoperative—so far we do not think, do not judge. Judgment, then, so far as it *is* judgment, is always positive, and the distinction of affirmative and negative is without significance.

A corollary of this position is that there is no such process as double negation, the negation of a negation. For our present position, it is true, the distinction of affirmative and negative is without value. But there remains a possible distinction between positive and negative, between success and failure in our attempts to judge, between judgment and absence of judgment. It might be imagined that if a single "negative" represents a failure to judge, a double negative might still be possible, as a scientist might first

[1] It may be that *A* really is *D* or really is not *E*, but that the experiment was perhaps badly organised. Many a correct hypothesis has been abandoned for a time, in default of adequate instruments or more complete evidence.

make a false hypothesis, and then, in testing it, might fail to discover that it was false. Let us test this suggestion. Let us experiment, and see if it is possible to construct a double negative.

We begin by constructing a single negative. For example, we construct the floating adjective *A-C*, but fail to connect it with reality, and thus obtain negative results. We are left, as we say, up in the air. We have on our hands a mere idea, a floating adjective (*A-C*), *plus* a sense of failure and ignorance. We do not know whether the fault is in the adjective, or in our attempts to attach it to a substantive reality. Let us proceed. We try to "negate" this negative result by further experimentation. We construct the hypothesis that the reason for our non-success is faulty construction in the original hypothesis *A-C*—*e.g.*, that it was not properly representative of the concrete situation from which we started, or that it contains some kind of inconsistency. Our new hypothesis is thus *A-C-I* (*A-C* is improperly constructed). In order that we should be able to obtain, with this hypothesis, a second negative, we must, for the second time fail. Good. We fail in our attempt to attach the floating adjective *A-C-I* to the reality (*A-C*). That is, we fail to grasp the nature of our original hypothesis, and are left ignorant as to whether it was, or was not, improperly constructed. Our only certainty is that our attempt (to establish the improper construction of *A-C*) has resulted in failure. Like Socrates, we know that we do not know. We recognise, that is to say, that we have not judged, we perceive that we have failed to perform any operation upon the first negative result. In other words, we have not "negated" our first negation —we have failed to do anything whatever to it. From this Socratic standpoint, it becomes clear that, just as no amount of multiplication or division of one zero by another will give us positive units, so no multiplication of the absence of judgment will ever lead to positive information. There is no such thing as continuity or "doubleness" in a series of negations, just because there is no such form of judgment as a single negation. *Not to judge* completely excludes us from the sphere of operation of judgment, and upon not-judgment we can, by further failing to judge, perform no operation whatever.

II.

We may now attempt to answer the question raised at the outset, as to whether there is or is not an inconsistency between the doctrines of traditional and modern logic *re* the subjectivity of negation. For traditional logic, there is a distinction between affirmative and negative propositional forms, corresponding to the distinction between relations of inclusion and relations of exclusion. For modern logic, there is a distinction between objective and subjective, between judgment and absence of judgment. Let us compare the two standpoints by translating the traditional conclusions into the terminology of modern logic. Let us attempt to

apprehend a relation of inclusion (*A is B*), and a relation of exclusion (*A is not C*). So far as we succeed in establishing contact with reality, both forms of judgment give positive information and are equally objective. In this case, then, what traditional logic regards as negative—the relation of exclusion—is, for modern logic, no more subjective than what traditional logic regards as affirmative. Suppose that we only partly succeed in establishing contact—as is the case with human attempts to judge. Both attempted apprehensions, inclusive and exclusive alike, now represent partial failures to judge, and so far throw us back upon ourselves, or are subjective. Neither form has here precedence over the other. Suppose, finally, an entire failure to effect a judgment—suppose us left in suspense with two floating adjectives (*A-B* and *A-not-C*). Both alike now represent complete failures, and are equally subjective. That is to say, the traditional view, that judgments of inclusion and judgments of exclusion are on a par in respect of objectivity and subjectivity, is amply borne out by our examination. The traditional opposition between affirmative and negative is transcended as we proceed more deeply into the subject, and the difference between traditional and modern logic is a difference of levels of thought. There is no "unyielding contradiction". The distinction between affirmative and negative which we find in traditional logic is in no respect inconsistent with the distinction between objective and subjective, between judgment and absence of judgment, which we have found to be characteristic of modern logic. There is a difference of problems, but no clash between their solutions, and we may safely accept both.

III.

It cannot escape the reader who is familiar with modern logic, that the above conclusions, which avoid all conflict between traditional and modern logic on this point by recognising a sharply defined difference of outlook, are largely at variance with the views deduced from the same premises by writers such as Sigwart, Bradley, Erdmann, etc. The chief reason for this divergence appears to be that these writers, engaged as they were in a polemic against tradition in order to make room for the newer views, at times would criticise the traditional views from the traditional level, and were not always careful to keep in the foreground the rigorous distinction of levels of thought which is characteristic of the modern view of which they were the champions. *E.g.*, they do not sufficiently insist that a judgment of the form *A is not C* is from the new standpoint positive or objective, and in no sense negative or subjective. Dealing, as they do, with a logical tradition in which propositional form differences are of importance, they continue to write as though such distinctions had not been superseded by the adoption of the new point of view, and this shifting of viewpoints at times introduces confusion, and leads to

conclusions which are not, perhaps, strictly deduced from the modern premises.

One of these conclusions is of sufficient importance, and sufficiently germane to the present subject, to merit especial consideration. It is claimed by many of the modern writers that the negative proposition-form is "indefinite". The argument is as follows:— To say that *John is not walking home* (the bare negative) does not tell me *how* John is approaching his residence, or even that he is doing so at all, or even that there *is* such a person as John. This last portion of the criticism is unjust. The statement that *John is not walking home* does imply that there is such a person as John, that he does have a home, and that he does sometimes walk in that direction. Taken apart from any context, as a mere form of words to which we have to supply a meaning by guess-work, the statement does not tell us whether John is approaching his residence in a taxi-cab, or whether he is perhaps walking in a different direction, etc. To this extent the bare negative is indeterminate, and it is chiefly for this reason that the negative proposition-form is regarded as "indefinite".

Regarded, however, as a criticism of the negative propositional form, such a charge of indefiniteness is unfair. It might, for instance, equally well be brought against judgments affirmative in form. *There is something wrong with my watch* is "indefinite" in that it does not state *what* is wrong. It may be the works which are out of order. It may be that the key is missing, the crystal broken, etc. *Any* statement, in fact, when taken out of its context, is ambiguous and "indefinite"—*i.e.*, stimulates us to think out a variety of possible contexts, but without supplying a principle which shall enable us to select *one* context as the right one. It is the absence of determinate context which is the source of the ambiguity, and not the affirmative or negative form of expression. This we see at once if we supply a definite context. Is it *John* who is walking? Is he *walking*—or riding? Is he coming *in this direction?* To each of these questions, the negative answer is perfectly definite. *No, it is not John*, etc. This does not tell us who it *is*. True—but that was not the question. The question asked has been answered, and where the question is determinate the answer *No* is just as definite as the answer *Yes*. The definiteness of the statement thus depends upon the determinateness of the context to which the statement refers, and not upon whether the statement is expressed in affirmative or negative form. In fact, as we have already seen, *any* meaning can be expressed, by a skilful rhetorician, indifferently in either form.

So far, we have not really approached the question from the "modern" point of view. For the modern logician, all judgment, so far as reality is truly apprehended, so far as we positively judge, is definite. It is absence of determinate thought, absence of judgment, which is the source of vagueness, ambiguity, indefiniteness. It is because "negation" for him means absence of determinate

judgment, that the modern logician charges it with indefiniteness. It is not the propositional form, but the failure to think adequately, which is the proper object of his censure. So far as we fail to think our way through a question, we are not certain. Our work is only half done. We fail to reach a determinate conclusion. But the problems of traditional and modern logic are here so disparate, that there is no clash whatever with the traditional treatment of negation. The difficulty of *nicht zu Ende denken* affects our affirmative no less than our negative forms of expression. As in the case of subjectivity, so in the case of indefiniteness, these propositional forms are on a par, and it is a mistake, if we suppose that there is on this point any inconsistency between the fundamental position of modern logic and the distinctions of traditional logic, which rest undisturbed at a different level of thought.

RUPERT CLENDON LODGE.

V.—CRITICAL NOTICE.

The Metaphysical Theory of the State. By L. T. Hobhouse. London: George Allen & Unwin, Ltd., 1918. Pp. 156.

Prof. Hobhouse has given us what is in many ways a wonderfully fine book, which deserves to be read and re-read as a counterblast to the Anglo-Hegelian glorification of the "State" by every one who is interested in the theory of πολιτικὴ in the wide Hellenic sense. With the main principles of Prof. Hobhouse's argument the present reviewer, at least, feels himself heartily at one. It has rarely been his good fortune to meet in modern literature with a better or more convincing exposition of the fundamental proposition that morality does not rest on the State, but the claim of any State to allegiance on morality, or a more careful examination of the fallacies which beset the once popular identification of the "State" with the embodiment of the "real" will of its subjects, and of this "real will" with the good. If "general will" is either only a name for the ends willed at a given moment by the "damned compact majority" or a "*vox nihili*," if a man's "real will" (assuming that the words mean, as they should for the purposes of the identification of the "State" with God, what a man *actually* wills), is often far from being directed to true good, and if the "State" is only one of a number of interpenetrating social organisations, and I think Prof. Hobhouse establishes all these theses, the whole argument for regarding the nation-State as a superhuman source of rights against which no individual can have any rights of his own collapses completely. We find ourselves back again face to face with the good old Christian and English doctrine of indefeasible "natural" rights, and discover how much more truth there is in the theory of the "social compact" than the new Machiavellianism of nineteenth-century *Realpolitiker* has been willing to allow. At the same time I cannot but feel that, good as Prof. Hobhouse's book is, it might have been better still but for a certain tendency which runs through it to give up to party what is meant for mankind. The exposure of the fallacies of the worshipper of the State does not depend on any premisses involving propositions likely to be denied by an intelligent man whatever his "party" in local politics may be. Nor is the exaltation of the "State" into a god, or, at least, a vice-gerent of God, who can "do no wrong," confined to any one political party. It may appear as legitimist glorification of the "divine right" of a

monarch, as Napoleonism, as the alleged philosophical justification of collectivist regimentation or "proletarian dictatorship". But Prof. Hobhouse has a way of writing as though the doctrines which he attacks were somehow the peculiar property of "Conservatives" and as though Conservatism were another name for the exploitation of a whole community in the selfish interests of a particular class. "Rebel," "revolutionary," seem to be with him always epithets of praise, and the "rebel" to be identical with the "idealist" and even with the "philosopher and statesman". He has, in fact, a very poor opinion of the wisdom and honesty of all past or present rulers. From the true considerations that, speaking generally, institutions are not fashioned *en bloc* by a single intelligence, but grow, and that they are the results of compromise between parties none of whom ever foresee much of what will come out of their conflicts or co-operations, he tends to draw the conclusion that almost any individual who condemns existing social institutions and propounds a Utopia of his own is likely to be wiser than the society against which he revolts.

Now no one should complain that the temperamental bias of a writer on problems of social philosophy shines through his theories. The thing is inevitable, and it may fairly be said that Prof. Hobhouse's bias is a useful corrective to that of Prof. Bosanquet, against whose *Philosophical Theory of the State* Prof. Hobhouse's book is a direct polemic. But it ought to be clearly understood that so strong a temperamental bias seriously affects the historical value of much that Prof. Hobhouse says. It is not historically true that the theory which makes the State, as the embodiment of the "general will," superior to moral obligations has any special connexion with political Conservatism. As Mr. Hobhouse himself has to admit, it was not the "reactionary" Hegel, but the revolutionary Rousseau who invented the doctrine of "forcing" the dissentient "to be free". The theory was acted on by French revolutionists long before Hegel found it convenient as a defence of the personal rule of Hohenzollerns. At the present moment it is not likely to be acted on by "Conservatives," but very likely to be abused to the worst ends by "proletarian" dictators wherever political power falls into their hands. The men of the French Revolution had made the forcing of "freedom," as they understood it, on the "slaves of George and Francis" an excuse for aggressive warfare long before there was a German Empire with a *Kultur* to be imposed on the world at large. If we imagine that Tsars and "aristocracies" are the only or the most dangerous enemies of the national freedom of the individual we are likely to have our eyes painfully opened for us before long. Precisely because I set a high value on my own personal freedom, I would myself sooner fall into the hands of any monarch or aristocracy than into those of Mr. S. Webb or Mr. Smillie. "What Frenchman," said Johnson once to a speaker who was denouncing monarchy, "is hindered from passing his life as he pleases?"

There is every indication that under the well-regimented Socialist bureaucracy of the Fabians, or the working-class tyranny dreamed of by Mr. Smillie and his friends, very many Englishmen would be very effectually prevented from living as they please.

So, again, there seems no reason to presume that the social "rebel" is necessarily an "idealist" or a "statesman and philosopher". A man may be a rebel for the sake of a high ideal, no doubt. He may also, in a time of revolution, stand fast by the established order for high ideal reasons. On the other hand acquiescence and revolt alike may be, and often are, prompted by purely selfish and sordid motives. There are "rebels" who deserve no more sympathy than the *Apache* whom they resemble. There must surely be something wrong about premisses which lead *a priori* to the conclusion that Marat or even Hébert had the advantage of Burke in "philosophy and statesmanship". The fact is Prof. Hobhouse starts with a pessimistic estimate of social institutions which seems as unfounded as the optimism which he very justly ridicules. It is, I would suggest, not at all a fact that a governing class always "makes the laws" in its own class-interest, and with no regard at all for the good of the community. That was just the false assumption of Thrasymachus rightly exposed by Socrates in the *Republic*. What is true is that class-interest does often vitiate legislation. This does not in the least mean that it is the mainspring of all legislation. Thus, for reasons which have been forcibly expounded by Hobbes, the most absolute of monarchs is bound, even if it were solely for the sake of his dynasty, to aim at the well-being of his subjects, and in our own history we owe an inestimable debt to the legislation of such personal rulers as Henry II. So again, during the period from 1688 to 1832 when the "country gentlemen" were the real rulers of England, much that was indefensible was done from class-interest, but it would be a ridiculously short-sighted verdict to say that the whole, or even the main, attention of the ruling class of the period was concentrated on their class-interests. After all they governed on the whole well, certainly not worse than the manufacturers who succeeded to their position after 1832 or the demagogues who have replaced the manufacturers. It would at least be no very startling paradox to maintain that Sir Robert Peel was a *more* public-spirited and more intelligent "statesman" than the present Prime Minister, though Peel did belong to the "capitalist" class and Mr. George does not. Indeed, it seems to me that Prof. Hobhouse's zeal for democracy leads him to lengths which are really inconsistent with his own convictions. His own convictions appear to be almost those of the philosophic Anarchist. He seems to regard all restraint on the wishes of any man to do as he pleases as an evil, though a necessary evil, and to be anxious to reduce it to a minimum. But experience seems to show that real democracy is more intolerant of the freedom of the dissentient individual than any other kind of social system. You my see this, for example, in the United

States of America. You need not obey the laws there, if you can command the money required for setting the machinery which delays their operation at work, or if you have the active sympathy of the crowd on your side. But if you seriously offend the local majority you are lynched. A man who speaks his mind as freely as Prof. Hobhouse and has so individual a "mind" to speak, is just the kind of man who would find life intolerable in the kind of community to which, as a political party man, he seems to have given all his sympathies. I would suggest that Prof. Hobhouse should at least think again about a question which he appears to have decided a little hastily. He seems to assume that institutions,—except, possibly, in a democracy,—embody only the passions, not the intelligence, of their authors, while the opinions of the "rebel" express intelligence and not passion. Is this not less than just to established order and more than just to "rebels"? When a man is in violent revolt against the law of marriage, for example, how often are his "free love" opinions the result of calm and unbiassed study of human life, how often a mere disguise for his desire to get rid of his own wife or to annex some other man's? On the other side, there are surely some institutions to which Prof. Hobhouse himself is attached, not because he expects to "make" anything out of them, but because he judges them to be for the good of men. And he will not suggest that no one who happens to be more "conservative" than himself can be capable of the same kind of disinterestedness. I could also wish he would ask himself whether he is clear about his preference as between pacific Anarchy and democracy. I believe the first is his "real flame" and the second only his Euphelia. Well, the arrangement which allows a man Euphelia and Chloe at the same time is an agreeable one, but each is best kept ignorant of the other's existence. Democracy cannot avoid the coercion of the Anarchist who is so much of an "aristo" as to prefer his own judgment to that of the compact majority, and real Anarchy is essentially anti-democratic. If you are an Anarchist you *must* find the *vox Dei* not in the *vox populi*, but, so far as your affairs are concerned, in *yourself*. And finally, in view of his tendency to Anarchy, as shown in his assumption that any restraint on my liberty to do as *I* please involves evil, I wish Prof. Hobhouse had explained exactly what he means by the "equality" on which he insists as necessary to a sound social order. If I may do so without offence, I recommend him to re-read *An Enemy of the People*.

To come now to particulars. In a way, I am glad that Prof. Hobhouse should have composed a direct answer to Prof. Bosanquet's book. Every one who holds with Plato that politics is applied ethics must have felt that an exposition of the view that there are no rights against the State by a philosopher whose authority carries such weight as Prof. Bosanquet's ought to be directly answered, even if one thinks, as I incline to do, that *The Philosophical Theory of the State* is the weakest work Prof. Bosanquet has given

us. Yet, in a way, Prof. Hobhouse is hampered throughout his own reasoning by his choice of Prof. Bosanquet for his "drunken Helot". Prof. Bosanquet's second thoughts, as shown in the revised edition of his book, seem often to qualify the doctrine to the point of explaining it away, as Prof. Hobhouse himself recognises. Hence it often becomes necessary for him to distinguish between very different possible meanings which can be extracted from Prof. Bosanquet's text, and, for purposes of refutation, to adopt that which is ethically worst though logically most consistent with Prof. Bosanquet's express premisses. I suspect that in all these cases Prof. Bosanquet's bark is worse than his bite, and that his practical conclusions are not much more different from Prof. Hobhouse's own than might be expected from a difference in temperament, and Prof. Hobhouse seems to be of the same opinion. This inevitably gives a certain air of unreality to the monomachy between them. Also, I think, another consequence is that the great *practical* defect of Prof. Bosanquet's work goes unnoticed except in one incidental remark. So far as I can see, the practical mischief in Prof. Bosanquet's book is due not to Hegel but to the Charity Organisation Society. He does not really think, whatever he may say, that the State can "do no wrong," but he does seem to be quite serious in holding that the right spirit in which wrongs, whatever their origin may be, ought to be redressed is that of a Committee which takes a cold and unemotional interest in social statistics and social problems but has no sympathy with the individual as an individual, no bowels of mercies, and no capacity for white-hot generous indignation. The sufferer from a wrong seems to be regarded by Prof. Bosanquet and the C.O.S. not as a "brother for whom Christ died" but as a "case". Of course I know that in dealing with the diseases of the body politic, as in dealing with those of the natural body, it is well that the intellect of the physician should not be obscured by uncontrolled emotion. This, no doubt, is why physicians make it a rule not to treat their own nearest and dearest, but to put them under the care of a brother practitioner. And I own I suspect that a social reformer of the temperament of Mr. Hobhouse would be, in practice, in some danger of hanging the wrong man rather than no one when his indignation at some social evil is keenly aroused. But Prof. Bosanquet seems to carry detachment to an extreme. He seems to me, too often, to forget that however dispassionate we may be in our analysis of social disease, when the time to act comes, you must feel personal sympathy with your patient warmly if you are going to do him any good. Skill in diagnosis is by no means all that is wanted to make the great physician. I believe Prof. Hobhouse right in holding that the apparent emotional defects in Prof. Bosanquet's attitude are largely due to a purely false metaphysical opinion that all evil is illusory and that the worst things in the world, if we only knew more, would be seen to be "necessary to the perfection of the whole". The denial of contingency seems to me to be fatal to ethical seriousness if one is in earnest with it, as some of the Eastern philosophies

are. I am not sure whether Prof. Hobhouse means to suggest that such a denial is a necessary consequence of a genuine Theism. If he does, I believe he is mistaken, but the point need not be argued here.

In his opening lecture Prof. Hobhouse, where he is insisting on the indispensability of ethics as one of the bases of social philosophy, has some remarks which might perhaps provoke a little criticism. Social philosophy, we are told, has primarily to deal with the ideal at which we should aim, but this ideal "must grow out of reality," "it must be that which we can become," "must be sociologically possible". Prof. Hobhouse's point is that social *science* is the study of the "sociologically possible," and that it is thus a study of events through their causes. In the popular phraseology of the day, social philosophy deals with "values," social science with "facts," but the former implies the latter. "Even as pure theory, the philosophical view cannot afford to disregard the facts." Unfortunately, there "exists a form of social theory which repudiates in principle" this distinction between social philosophy and social science. This is the theory that the world actually is already perfect. I have already, I hope, made it clear that I fully agree with Prof. Hobhouse that sound ethical and political theory are impossible if we start with the assumption that what ought to be is just what happens to be. But I am not wholly satisfied with his conception of social science as distinct from social philosophy. You certainly cannot discover what ought to be by merely asking what is and how it has come to be. But how is it proposed to make a *separate* study of the "sociologically possible"? How do we learn what it is possible for us to become except from the knowledge of what we ought to be? We know what we ought to be, and we learn from what we ought to be what we can be. It is because we know that we ought to live the good life that we believe it possible to live it. On this point Kant's doctrine seems to me substantially right. Even to the question of "fact" *What am I?* the truest answer is that I am a being such that I *ought* to pursue certain ends, a being who ought to discover truth, to do good and to make what is beautiful. Prof. Hobhouse seems to me to leave too much of the type of theory he rejects standing when he concedes that we need to find out, by some method incomprehensible to me, what we can be before we are in a position to formulate our "ideal" for ourselves. I should rather have maintained that we start with the knowledge of what we ought to be, and that "social science" is altogether confined to the humble task of indicating means to an end which has already been prescribed for us by ethics before we begin to consider "facts" and laws of causal connexion at all. This is not to justify the "ethics of revolt". They are usually prompted by annoyance with a world in which the "rebel" cannot have everything as he would like to have it. But the only question of ethical significance is the question not *What should I like?* but *What is good?* It is only a very thoughtless Hedonism

which confuses the first of these questions with the second. I do not think Prof. Hobhouse is, in intention at any rate, a Hedonist, but I think he does at times fall into a confusion between what we wish for and what is good which creates needless difficulty in his social theory and leads him to an unduly pessimistic estimate of the actual. He sees the world very much as a "vale of tears" because he tends to argue that all of us have to go without much we desire, and to be disappointed of your desires is always evil, though it may be an unavoidable evil. But is it so certain that the mere failure to gratify your desire is evil as such? Surely the answer is "that depends on what you are desiring". If a man desires what is not good, it is better that his desire should be thwarted, or, it may be, overridden by the social order with its penalties. The evil in this case is not the thwarting of the desire but its existence. "It is not good for men to get all they wish for," as Heracleitus said. There are real evils enough in the world without adding to the number the failure of the fool to get the worthless things on which he has set his fancy. But unless we reckon the disappointment of the fool as a real evil, the world does not turn out to be so black as Prof. Hobhouse is inclined to paint it. It is no more all evil than it is all good, and, though it is right to be keenly alive to the amount of preventible evil, it is also our duty not to brood sullenly on our own hardships and disappointments, but to cultivate the habit of keeping our eyes open to the sources of happiness that are always open to us. "There's always the wind on the heath," and there is always that supreme Beauty which some of us call God and others call by other names, and from these sources of delight no one but ourselves can separate us. I do not want to say a word which could be taken for a moment as a denial that the suppression of injustice is a universal duty, but I cannot help remarking that it is not from the mouth of the real victims of "social oppression" that the doctrine of "revolt" usually comes. Envy and carnality do more than "oppression" to make the red-hot "social rebels".

I suggest that Prof. Hobhouse has allowed his justifiable opposition to any doctrine which sacrifices the well-being of individual men and women to a fancied well-being of a mythical leviathan to mislead him into an unduly egoistic conception of the end of life. Certainly the State and its institutions have no value except as ministering to the well-being of men and women, but it does not follow that to minister to a man's well-being is the same thing as to provide him with what he likes. He may like what is bad, and in that case you do not minister to his good at all by putting him in the way to get what he likes. Hence I cannot think, as Prof. Hobhouse seems to do, that there is anything necessarily evil about the restraint which life in society puts on a man's freedom to "do all he likes". This conception that freedom and law are not really compatible seems to me to vitiate some of the things which Prof. Hobhouse says in his otherwise excellent treatment of *Freedom and*

Law and *The Real Will*. Prof. Bosanquet would, I think, be able to make out a strong case against some of the contentions of both these chapters. Prof. Hobhouse seems to me not quite alive to the ambiguity of the words "want" and "to want". When it is said that *A* wants *x*, this may mean either (1) that *A* wishes to have *x* or (2) that it would be good for *A* to get *x*. It is only when the phrase is used in the second sense that it can be said that it is always an evil that *A* should not get the *x* he "wants". And when the words are so used, they may refer to something which *A* does *not* wish for. (*E.g.*, "what you want is a jolly good thrashing" may be neither more nor less than the truth.) Since many, if not most, of the things we "want," in the sense of lusting after them or being discontented because we can't get them, are bad, I see no reason to hold that it is *per se* an evil thing that the existence of law and order means that all of us have to go without many of these things. In fact I should think a society in which I was not hindered by force, if needs be, from gratifying some of my wishes, morally very bad indeed.

So again, I find such an assumption as that the "interest" of the "million" must be "greater" than the interest of the "one" (p. 30) highly ambiguous. If it means that it is better that a million persons should enjoy true good than that only one should, I agree. But so understood, the remark does not make in any special way for "democracy". If it is meant that it is reasonable that what a million persons wish for should be done rather than what one person wishes for, the proposition may be disputed. The "one" may be Socrates or Christ and the "million" may be sots or rogues.

It naturally follows that I find it hard to agree with Prof. Hobhouse's views about obedience. He will have nothing to do with the doctrine of winning true freedom by obedience. Obedience (p. 59) is always the choice of "the lesser evil," because it means doing what I do not wish, submitting my will to that of some one else, and this is always an evil, though not so grave an evil as the submission of a greater number of wills to mine. So we are told on page 35 that the man who subdues passion and follows principle is not really free, because obedience to principle means the inhibition of passion or impulse. Since, as Prof. Hobhouse adds, distraction between rival passions or impulses is not freedom either, it begins to look as though freedom meant something quite impossible under any social conditions from those of complete Anarchy to those of thorough-going regimentation. If it is an impossibility, it can hardly be the important thing Prof. Hobhouse assumes it to be. But surely it is plain that in aiming at what we are convinced is true good we do feel ourselves free, even though we may have to inhibit unruly motions of the soul towards what is judged not to be true good. And is it not equally plain that we only learn to choose true good, and to choose it steadily by a training in obedience to *just* law? Prof. Hobhouse seems to hold that the real meaning of freedom is following, without internal or external

let or hindrance, a *self*-chosen end, be it what it may, and the real meaning of obedience is submission to the wishes of another. No doubt, to be free at all you must be living for an end you judge to be good, but to my mind, the really important point is not simply that *you* judge this end to be good, but that your judgment is also a true one. And so, to my mind, obedience need not be submission to the will of another, because it is that other will; it may be submission to one's own conviction about good. Thus the ordinary good Christian will say that it is the supreme rule of life to do what God wills, but he means always to imply that God wills what is *per se* right and good. I cannot myself see that it is ever an adequate reason why a thing should be done that *I* will it; the one really satisfactory reason for doing anything is that it is good that it should be done. We shall never recover a sound Ethics until we once more make not the "self" but the good the central concept of our moral philosophy.

It is this touch of over-insistence on what the Hegelians would call "bare" or "unmediated" selfhood which makes me feel that Prof. Hobhouse's attack on the notion of a "real" will, other than the conscious choices of an individual person is hardly as successful as his criticism of the conception of the *volonté générale*. The controversy about the "real" will seems to me at least itself only half-real. Prof. Hobhouse will hear nothing of the notion of "degrees of reality": with him, of every subject you must say either that it is real or that it is not. This means, of course, that the "real" is taken as equivalent to the "actual". But though any one is free to use the word "real" in his own sense, if you do choose to identify the real with the actual, your identification makes nonsense of the writings not only of the philosophers who have spoken of an *ens realissimum* but of those of the poets who talk, for example, of "Forms more real than living man". We may say, no doubt, that Anselm or Shelley was talking mere nonsense, but at least they thought they meant something, and it might be worth while to try to find out what that something is. In the case of the controversy about the "real" will, Prof. Bosanquet would, I conceive, admit what is urged against him. He would not maintain that the "real" will of which he speaks is a series of actual conscious choices. On the other hand, however, he has himself given excellent examples by way of illustration which ought to make it clear that he means something quite definite. I remember that he speaks, for example, of the blame which we bestow on the police if a bad accident results from their failure to protect a crowd from the consequences of its own impulsive acts. When this happens, no one supposes that, as a "psychological fact" the crowd who expose themselves to injury by breaking down barriers actually frame a conscious volition which is thwarted by the ensuing accident, but this criticism only shows at most that the *name* "real will" is perhaps not the best which could be devised for our relation to what we care about supremely. It does not show that a man is unfree, in any sense in

which to be unfree is evil, because the police will not let him endanger his neck. Or, to take a different example, has Prof. Hobhouse ever read *Le Docteur Pascal?* If he has, he may remember that one of the leading ideas of Zola's story is that "love" between a man and a woman is often "camouflaged" desire for offspring, though it is only when the desired child is there, or is on the way, that the parties become alive to the fact. This is, I should have supposed, a notorious fact, though, of course, it is not the fact that the desire for the child has consciously been present all along. Yet it would be carping at words to cavil at the phrase, "what Clotilde in *Le Docteur Pascal* wanted all the time was maternity".

The real source of mischief in the Rousseau *cum* Hegel doctrine seems to me to be not the theory of the "real" will, but the confusion of this "real" will, or whatever else you like to call it, with the "general" will, and the further curious equivocation by which the "general" will—*i.e.*, the will animating a corporate body, is identified with a will for an "universal" object. The first confusion seems to arise from forgetting that though we never will anything except *sub specie boni*, each of us actually wills "what appears to *him* to be good," and what appears to me to be good may often be bad. If we were all perfectly wise, and willed only what really is good, we could without leading to misunderstanding speak of the will for good as the "general will" or "will of the community". It is just because we have not all insight into the true good that there is no guarantee that the "community's will" is right. Prof. Hobhouse's criticism of this doctrine of the *volonté générale* (p. 50 ff.) appears to me admirable, except that I find it hard to follow him in what seems to me his view that "isolation" is the "core" of individuality. Surely it is by being what it is, not by not being something else, that the individual is individualised. Individuality cannot be *mere* negation. What Prof. Hobhouse is opposing when he maintains this negative view of individuality is, of course, Prof. Bosanquet's persistent attempt to represent individuality as something quite superficial, and individuals as capable of actual "inclusion in" an individual of a "higher" type. I am quite in accord with Prof. Hobhouse's repudiation of this doctrine, but I am not sure that his criticism of it is the true one. May it not be that the really pertinent criticism is that the theory rests on a confusion of the individual subject with that of which he is immediately aware? I do not see why the whole of what I am aware of might not also be apprehended by a second or a third subject. Even my "organic sensations" do not seem to me to be demonstrably unshareable. To put the point in popular language, I do not see that it would be impossible that my body should be "organic" to several intelligences. In that case, the "contents" of the various "experiences" would consist of the same constituents, with the difference that what was "focal" for one experient would be "marginal" for another, and that the "involuntary reactions" of one would be the "voluntary acts" of another. If this were the fact, some might

be tempted to identify the different experients, but this, I take it, would be a mistake. The "contents" of two such experiences might be identical, but the subjective attitudes of the experients to these "contents" would be different, and the two experients would therefore be two individuals, and not one. I am using my suggestion, of course, as a mere illustrative hypothesis, but there are known cases on record of pathological abnormalities which make it possible that the hypothesis may be something more than a fiction.

Is Prof. Hobhouse sure he is quite justified in saying that in a "democratic and uniform society" we "expect to find greater mildness in the use of penalties"? I mean, if we expect this, does experience show that the expectation is well founded? I am not sure that the statement does not require modification. It seems to be true that the penal code of an orderly democratic state is comparatively mild, but, on the other side, effective democracy seems to mean much the same thing as the domination of the local mob, and the local mob has a way of "penalising" disagreement with its prejudices by "lynching". In the United States it is harder to get a murderer executed after conviction by a lawful court than in most European countries, but if you give serious offence to the "boys," you are hanged, or, if your skin is black, burned alive by the local mob. The mildness of the penalties imposed by legal courts for offences against known law seems to be compensated by extension of extra-legal violence. Some of us would perhaps prefer a harsh penal code, fairly administered, to a "Terror," "Red," or "White," or to the extraordinary jurisdiction of Judge Lynch. It is after all, perhaps, only a secondary matter whether the constitution of a community is to be "democratic" or not. The great primary difference is that between societies which are ruled by known law, and societies which are ruled by caprice, whether the caprice be that of one man, of a few, or of the many. I myself should find it impossible to give any answer to the question whether "democracy" is a good thing or a bad, unless I were first told whether the democracy meant is one with a "fundamental law" or without one, and I should not suppose I am alone in my difficulty.

The chapters on *The Will of the State* and *Varying Applications* strike me as the best in Prof. Hobhouse's book. When allowance is made for the temperamental bias of which I have spoken, Prof. Hobhouse seems to me to say exactly what it is most necessary to say in reply to the deifiers of the State (*das Unthier, das Reich*, as Nietzsche calls it), and to say it so well that praise would be almost an impertinence. On the main issue, that, granted there is an embodied something whose will it is the whole of our duty to do, it is by no means clear that this something is the "State" rather than, *e.g.*, the "Church" or the *Internationale*, he has the strongest of cases, and he does it the fullest justice. As I have indicated, I think a dispassionate court would find at any rate a verdict of "not proven" on some of the counts of the indictment against Prof.

Bosanquet, but on the charge of confusing human society, the "brotherhood of man," with the Government for the time being, I do not see that any verdict is possible but "guilty," perhaps "with extenuating circumstances". Indeed, when I remember the extreme utterances in favour of passive obedience in the *Principles of Political Obligation*, I am not sure that it is not by a little favouritism that Prof. Hobhouse contrives to acquit T. H. Green.

Still, even in these excellent chapters, there seems to me to be a fair amount of special pleading. Thus it is observed, with too much justice, that most actual law is the product not of one will guided by clear insight into good, but of many wills, co-operating and clashing, swayed by very different and often very ignoble motives. This seems to me, however, a consequence of human imperfection which affects democratic government as much as any other. The "rule of the majority" often enough means in practice a combination of certain sections of society, each primarily concerned about its own advantage, to "exploit" others. Thus it seems to me quite possible that we may see in our own country the ruthless oppression of the so-called *bourgeoisie* by a combination between a lazy and vicious "proletariat" of loafers and a small ring of financial and political "bosses," both utterly indifferent to the "good of the whole". At any rate, I do not see how democratic institutions create any obstacle to the formation of such a combination. When one thinks of the bare-faced impostures by which the last General Election was won, one may be pardoned for wondering whether the best way to arrive at a fair estimate of democracy would not be to take all that Prof. Hobhouse has said of it, and all the Dean of St. Paul's has said, and try to "strike the average". On the other hand, it seems to me that the Anarchist in Prof. Hobhouse gets the upper hand for the moment when he maintains (p. 69) that the "spirit of world-history" is a "process in which States contend and destroy one another". Do they really never do anything else? Do they never co-operate and contribute to the building up of each other? The utterance reminds one of Shelley in his most pessimistic mood, but I can hardly believe that Prof. Hobhouse looks on history, as Shelley did by his own avowal, as a mere "disgusting" record of crime and folly.

Prof. Hobhouse returns to his point on p. 81 when he says, with obvious intention to extol the judgment of the individual "rebel," "when I will a thing, I clearly see what I mean to do". If this means that Prof. Hobhouse never takes a resolution without seeing clearly what, on a sane estimate of probabilities, will come of it, seeing "what he means to do" in all its bearings, he is a wiser man than most of us, and I would cheerfully exchange the best of democracies for the rule of the philosopher with Prof. Hobhouse as philosopher-king. But if Governments usually do not see very clearly what they are doing, "rebels" seem to me to be in much the same case. Did the promoters of the recent strike in the Yorkshire coal-mines see very clearly what they "meant to do"?

Or the "democratic" Cabinet which passed the Trades Disputes Act, and by doing so made the "strike against the community" possible? On the other hand, very few Governments known to history can ever have been so short-sightedly selfish as it is assumed at pp. 82-83 all Governments are. "The complete *ἀδικία*" described there might perhaps be nearly realised under a ruthless "proletarian dictatorship" or a thorough-going control of affairs by a group of Trust "magnates," but it goes far beyond anything that has ever been seen in our country, except perhaps in one or two periods of anarchy when there has been for the time no effective Government at all. It is to be hoped that such utter class-selfishness is a mere fiction, but if it is possible, surely it is just as likely to arise in the classes which are inevitably specially favoured by "democracy" as in any others. Arguing against the identification of the enactments of a governing class with the "general" will, Prof. Hobhouse pertinently reminds us that "it was not by the will of the peasantry that their fields were enclosed". True, but it was equally not by the will of the great mass of the people that 6s. a ton was recently added to the price of coal, nor will it be by the will of the *bourgeoisie* if they are loaded with taxation to provide one advantage after another for the industrials of the well-organised Trades Unions. But "democratic" institutions are quite powerless to prevent this form of injustice.

The carefully considered discussion of "conscientious objection" to the law on p. 90 ff. seems to me one of the best pieces of work in the book, but I think some injustice is done to the Government in the rhetorical attack on them in the note on p. 94 about the hardships suffered by certain objectors to military service. That there were cases of genuine hardship is undeniable. But they were caused, as I should say, in the main by a well-meant error on the part of Government. The rational course would have been to allow no exemptions on the ground of "conscientious objection," and to impose a uniform penalty. The conscientious objector would then, no doubt, have had to suffer for his objection, but in the world as it is, this seems to be the inevitable price for being before—or behind—your age in your "convictions". I, at least, should not think I had any right to complain if I were penalised for my conviction that it is wrong to do what my countrymen as a body think it a man's duty to do. The Government, meaning to be kind to the really conscientious objector, allowed such objections as a valid ground for exemption. This, of course, produced, as might have been foreseen, a crop of hypocrites who pleaded "conscience" as a mere excuse for shirking onerous and dangerous service, and the consequence was that the cruel task of finding out who were the real "conscientious" objectors, and who were the hypocrites, was inevitably thrown on local tribunals. That there was no uniformity of standard between the different tribunals—the chief grievance of which Prof. Hobhouse speaks—was again inevitable. The variations of standard really give no ground for attacking the integrity of the members of

the tribunals, or denouncing them as persecutors. I cannot help thinking that Prof. Hobhouse would be kinder and juster in discussing the blunders of bodies composed of "working-men".

I am a little surprised again to find Prof. Hobhouse, on p. 110, expressing unreserved approval of a well-known passage in the *Biglow Papers* which, if it means anything, means that every private soldier employed in a war which has been unjustly resolved on, is a murderer. This seems really absurd, particularly in the case of a war in which the combatants are not volunteers but conscripts. It is only reasonable that the ordinary private man, whose opportunities of knowing and judging soberly of the facts of the situation which has led to a war are so limited, should be held clear of the responsibility for the goodness of the cause. Of course, a man may have information which would make it his duty to refuse to serve, but it is nonsense to suggest that there were many men in this country during the late war who could have had special knowledge of this kind. To do the "conscientious objectors" justice, most of them did not make it their plea that *this* war in particular was unjust. Their objection was to war as such. And on the general question, one may fairly ask both Lowell and Prof. Hobhouse, neither of whom professes to regard war as always wrong *in se*, is the executioner who hangs a man convicted on the evidence by a legally constituted court a murderer, if it turns out afterwards that the man was *de facto* innocent? Is the turnkey who keeps a prisoner in custody a criminal if it is discovered that the man's conviction was a mistake? Is a hangman to refuse to do his office or a turnkey to release his prisoners unless he has first formed a personal opinion on the merits of the case? We usually hold that that is the business of the judge and jury, and that it would be intolerable presumption on the part of the executive officers to usurp the judicial function. Why is this principle to be rejected in the case of the soldier? I can only presume that Lowell was assuming that, in the special case of the Mexican war, every one who volunteered already *knew* that there was no justification for hostilities. I cannot suppose he meant anything so absurd as that the professional private soldier is always personally responsible for the decisions of the Government which employs him. One must remember that Lowell's lines are not addressed to professional troops; they are meant to deter civilians from volunteering for what Lowell held to be an iniquitous filibustering campaign. I am also not sure whether in some of the remarks which Prof. Hobhouse goes on to make about the distinction currently made between what a man may do as an agent of the State, and what he may do as a private gentleman, he keeps in mind the point that it is not quite clear that, when I act as a trustee for others, it is permissible for me to be as accommodating as I might if I were acting only for myself. For example, it is praiseworthy, in one's own concerns, not to insist on the letter of one's legal rights, but I doubt whether a trustee is not morally bound to insist on the full legal

rights of those whom he represents. This does seem to me to set certain bounds to the legitimacy of a policy of "graceful concessions". Of course, I do not mean for a moment to deny that no such considerations can be urged in defence of a great deal which "statesmen" have been accustomed to permit themselves to do on the plea of "reasons of state". I merely wish to suggest that in discussing these problems something of the dispassionate candour of Henry Sidgwick is as necessary as zeal for righteousness. I should not like to say myself, without qualification, that it is always wrong for an agent of the State to do what he would not do for himself in a private affair. I should prefer to say that he must not do the sort of thing an honourable man would judge it wrong to do as a trustee for a client.

As might be expected, Prof. Hobhouse hopes a great deal from a "League of Nations". I wish he had faced the difficulty which makes some of us rather less sanguine. Have we really very solid ground to hope that the judgments of such a League will always be given only after impartial scrutiny of facts, and will represent the honest convictions of the parties? If we have not, the findings of such a body will after all at best embody not what Rousseau calls the *volonté générale*, but only the *volonté de tous*. I doubt very much, for example, whether a League of any kind would have given a really just verdict on the issue between ourselves and President Kruger. Some of its members would have taken the side of Kruger merely from envy of the United Kingdom, others from a sentimental feeling for small countries as such, others to oblige powerful neighbours, while yet others would probably have supported our own contentions because it was to their own interest not to disoblige the United Kingdom. I gravely doubt whether a single vote would have been determined simply and solely by honest convictions about the rights and wrongs of the quarrel.

A. E. TAYLOR.

VI.—NEW BOOKS.

Essays in Common-Sense Philosophy. By C. E. M. Joad. London: Headley Bros., 1919. Pp. 252. 8s. 6d.

There are many philosophies; and in all of them there is an early stage at which certain propositions are simply asserted, their justification being sought at a later stage. In the later stage, however, these propositions tend to be modified. Thus, if we want to know what a philosopher really holds, we have to wait until he has developed. At the present time this is most often seen among realists. It is especially seen in this little book. Mr. Joad is a realist who wants to hold to common sense. He will not allow himself to be compelled by mere logic to depart from what he considers to be common sense. And thus (since Mr. Joad has not yet developed) we have a twofold appearance of dogmatism: Firstly in the basic propositions he holds as a realist, and secondly in the refusal in the name of common sense to follow these propositions to their logical conclusions. As a consequence there is hardly a single problem on which Mr. Joad does not hold contradictory views. This is, of course, no discredit; it simply means that the book is not final. Mr. Joad is seeking a position; and this book represents the first stage in his search. Contradictions in so far as they are due to his attempt to serve two masters, are in place here. They are a sign of vitality. But they must be faced: they are there to be got rid of.

There are seven essays; the first five deal with the philosophical basis of Mr. Joad's views, and the last two apply these views to Political Theory and to the relation of Thought and Temperament.

The Introduction is hopeful. If the fact that Reality is not an organic whole empties philosophy of much of what hitherto appeared significant, yet there are certain truths that remain. And this book is an attempt to state some of them, and to convince readers of their truth. Yet in the last chapter, Mr. Joad recognises the irrationality of the task. For there is no such thing as an act of pure intellectual apprehension. Every act involves both thought and temperament. Though the convictions we base on our selections of fact are intellectual,[1] yet our selections of fact are conditioned by temperament. This is especially the case in philosophy. Hence however rational we may attempt to be in philosophy, our philosophies will in the end be as our temperament. "Once grant that our selection of truth is not free, but that our choice is conditioned

[1] An important proposition if true, which however makes it difficult to see how our convictions can be anything but true, relative to our selections. And if Mr. Joad is correct in his account of judgment as based on perception, and if perception is as he thinks infallible, while judgment may err, it is difficult to avoid the further position that a set of entities selected from a whole can form an entity having relations between its parts which do not correspond to anything existing in the original whole. But this is surely too Monistic for Mr. Joad.

in part by temperament, and the irrationality of endeavouring to make others see truth as we see it becomes overwhelmingly clear" (p. 252). But in spite of this, Mr. Joad essays the task. And he so far forgets its irrationality as constantly to find it "curious" that people should accept certain doctrines he himself does not hold.

But while in philosophy (and in religion) temperament plays an overwhelming part, there are some kinds of knowledge exempt "mainly, if not wholly, from the influence of temperament": *viz.*, mathematical and scientific truths, and some truths regarding goodness and beauty. We all agree (Mr. Joad thinks) that 2 + 2 = 4, that sunsets are beautiful, that lying is wrong.

Mr. Joad thinks that our agreement on these propositions indicates that they fall within spheres within which mental activity is exempt from temperamental influence. There must, he argues in the chapter on "The Objectivity of our Concept of Beauty," be something objective in them which we are compelled to appreciate, so that temperament operates not so much in the selection of facts we make, as in the degree to which we appreciate this objective something. There is in short an εἶδος of Truth, Beauty, and Goodness.

Thus it seems that Mr. Joad holds that if there is something objective in beautiful things, we shall all be compelled to appreciate it independently of temperament: and again, that if there is something we are all compelled to appreciate, there must be something objective.

His fundamental axiom amounts to this, that whatever can truly be predicated of an entity belongs to the entity independently of minds. How then does he discover what can be truly predicated? He actually uses various tests (*a*) by simple assertion; (*b*) by appeal to unanimity (*e.g.*, pp. 122-123); (*c*) by confirmatory appeal to common sense, where there is not unanimity (p. 122); (*d*) by appeal to the facts of what we really think, in spite of whatever we may happen to think we think (p. 123).

(*d*) reduces to (*a*); (*c*) is cut out by the argument *re meringues* (p. 123). Thus we are left with (*a*) and (*b*). (*b*) is indeed argued against on pages 93-94, where it is suggested that opinion regarding beauty is chaotic; and he seems on page 123 to admit the possibility that there may be people who regard sunsets as not beautiful.

That Mr. Joad's arguments for the εἶδος of Beauty really reduce to simple assertion will be apparent to the attentive reader of his book; and we may note as symptomatic the arguments on pages 118 and 120. The argument on page 120 is brief, and we can give it in detail. He asks supporters of the subjective view of beauty, and also of the view that beauty is a relation between mind and object, to consider the following position. (I make the argument consecutive.) Suppose beauty involves an admirer. Then when all cease to admire, the beauty is gone, though the object is unchanged. *But its beauty belongs to it.* Hence it can't go if the object is unchanged. Hence beauty does not involve an admirer. Hence beauty must belong to the object.

The argument on page 118 involves a similar *petitio principii.*

We are left then with the assertion that there is an εἶδος of Beauty: together with the vague feeling that it ought to compel us all to appreciate its presence: but with the realisation that it does not always do so. For if he is willing to assume that everyone regards the Sistine Madonna as beautiful (or ought to) he is not so willing in the case of Wagner or the Merry Widow Waltz.

And in the chapter on "The Meaning of Truth" Mr. Joad is forced to the candid conclusion that there is no criterion of the truth of judgments

of beauty and goodness (p. 95). But if so, does not the whole of his argument in favour of εἴδη of Beauty and Goodness fall for lack of support?

There is just a suggestion of a principle contained in the argument (p. 155) against Prof. Alexander, which might be worth following out. Mr. Joad remarks that since there are people who regard a shilling as beautiful, the reasoning which makes its roundness and whiteness to be not mental should be extended to its beauty.

The principle at the basis of this remark might be taken to be: If it is possible to regard A as B, then B belongs to A independently of all thought. And this is perhaps the safest and most satisfactory principle for a realist to adopt. Mr. Joad should try it in connexion with his view of temperament.

Space forbids us to discuss in detail the chapter on "Universals as the Basis of Realism". We note only that the fact that truths depend on minds so that if there were no minds there would be no truth (which Mr. Joad holds) is not held to militate against an εἶδος of Truth (pp. 80, 81), though the fact there is an εἶδος of Beauty is held to militate against a parallel argument in the case of Beauty. The whole chapter appears to show vacillation on the question of the reality of time. Mr. Joad believes time to be real; he sees that Plato was led to his εἴδη largely because of his belief in the unreality of time; but many of his own arguments for εἴδη lose their force if time is real. Indeed the doctrine of the reality of time taken seriously seems to cut out all need for the independent being of universals. Mr. Joad is perhaps unnecessarily "tender minded" on this point.

I have tried to bring out the characteristic quality of this book; and I might equally well have taken other cases. Mr. Joad's coat is of many colours, and his book is very gay. We do not regard it as final. He has dealt the cards; he has now to play the game. That he will play it vigorously, the book itself promises. The chapter on "The Theory of the State" shows Mr. Joad at his best. There is no index. Mr. Joad might begin by making a full index, collating all the passages dealing with judgment, error, εἶδος, unreal, being, existence, universal, etc., as an aid to discovering where he himself stands.

LEONARD J. RUSSELL.

National and International Right and Wrong. By HENRY SIDGWICK. London: George Allen & Unwin. Pp. 77.

This republication of two essays from Sidgwick's little work on *Practical Ethics* is very opportune at a moment when the possibilities of a League of Nations and the danger of international "class warfare" are so much before the minds of all thoughtful men. It is not clear why such good wine should be supposed to need any bush, but if every book and booklet must have an encomiastic preface, Lord Bryce's has the merit of saying what has to be said with the dignity and restraint appropriate to the memory of Henry Sidgwick. The two little essays deserve to be carefully read and pondered by all intelligent students of contemporary social tendencies who have not read them before. They are, like everything Sidgwick wrote, the more impressive from their utter freedom from rhetoric and the caution and moderation with which their conclusions are expressed.

After the experiences of the last five years, the issue discussed in the essay on *Public Morality* may be fairly regarded as *chose jugée*. Neo-Machiavellianism has now been judged by its fruits and found wanting in everything which can recommend it to decent men. The immediate

future will probably supply an impressive commentary on the most incisive sentence of Sidgwick's examination of the claim of that particular corporation called the "State" to set itself above the laws of common morality. "If everything is permitted in national struggles for the sake of the nation, it will be easy to think that everything is permitted in party-struggles or class-struggles for the sake of the party or the class." This is exactly what both our professional politicians and our Marxians do think, and we are learning something now and shall have learned a great deal more by the end of next winter of the practical results to which such thinking leads. If exception can be taken to any of Sidgwick's statements, I should venture to think that the remarks on pages 36-37 are less than just to that much-maligned man of genius Hobbes. It is true that Hobbes, as Sidgwick says, held that persons "in a state of nature" are free to do whatever they judge to be for their own self-preservation. But it should be remembered that Hobbes also held equally strongly that it is a duty to put an end to this state as quickly and completely as possible. "To seek peace and ensue it" is, on his principles, the interest and duty of communities as well as of private persons. The point may be a little obscured by his terminology, but there is no reason for doubting the sincerity of his express assertion that though a ruler cannot commit injustice, he can be guilty of "iniquity," violation of the moral law which is also the law of the King of Kings. I think also that the analysis is not carried far enough in the passage where Sidgwick is discussing the limits within which current morality itself allows "States" and their officials a greater latitude of departure from rigid veracity than it permits to private persons. It is true that we commonly regard it as dutiful in a general or a detective to deceive the enemy or the criminal about matters of fact, but I doubt very much whether accepted morality would condone the conduct of a statesman or general if, "for reasons of state," he fabricated documents intended to represent the victims of an aggressive policy as the real aggressors, or circulated stories known by him to be false about cruelties and "atrocities" perpetrated by the enemy's orders. There was general indignation over the clumsy attempts of the Germans to make it appear that the Belgians had been plotting to violate their own neutralty, and the philo-Teuton minority among ourselves were probably sincerely indignant about what they described as the "manufactured" stories of German "atrocities". It is, I believe, usually held, though in a confused way, that the "medicinal lie" must not involve false aspersions on the honour and character of an opponent. So again I doubt whether public opinion among ourselves would tolerate *certain* false representations by a magistrate or a policeman. What would be said of a detective who extorted a confession from an offender by a false representation that an accomplice had offered to turn King's evidence? I believe it would be widely felt that such conduct "isn't cricket". It would be worth while to ask whether this feeling does not embody a sound principle.

The second essay, the *Morality of Strife*, hardly calls for any remarks. It is an unusually judicial and thoughtful examination of the limits within which it is reasonable to expect strife between nations or classes to be avoidable by habitual recourse to arbitration. Of course we all hope now, as we formerly hoped in vain when the Hague tribunal was instituted, that a League of Nations will do much to bring about so desirable a result. But unless we clearly recognise that there are limitations to the peace-promoting powers of any such organisation, we are in danger of bitter disappointment with real and valuable results because we have been hoping for impossibilities. There never was a time when men needed more than at the present to be reminded, as Sidgwick reminds us,

that organisations to diminish strife will accomplish little of themselves unless we make systematic effort to educate individuals into an improved sense of justice, a habit of trying to see every case from the point of view of the other party. I commend to warm-hearted but hasty Pacificists two observations in particular, that the mere intensification of "altruistic sentiment," unaccompanied by education in justice, would be quite likely to increase rather than to diminish strife, and the other observation that in nearly all conflicts between nations or classes each party is quite honestly convinced of the "justice" of its cause. Sidgwick seems to me quite right in holding that passionate zeal for a cause which is not *believed* to be a just one is a very rare thing indeed in modern life. What we really need is not rhetorical denunciation of the "horrors" of war; to some of the best minds such denunciations will often seem to be mere exhortations to sacrifice justice to "comfort". We need, above everything else, clear ideas about the limits of our "just rights". The machinery of a "League of Nations" may be very valuable as providing opportunity for enlightening ourselves on the point by learning how our case looks to the "impartial spectator". The difficulty, of course, is to be sure that even such a league will always reflect the views of an "impartial spectator". Its decisions *may* be only too often the unpredictable outcome of the "sectional" interests of its members, like the decisions of a Parliament broken up into small and intensely self-interested parties.

I should like to utter a mild protest against the passage in which Plato and Aristotle are made responsible for the view that war is the one serious business of a State and the professional military men the only class whose education need be an object of general concern. After all, it is Plato who says that the great mistake of existing States is to suppose that war is earnest and peace is play, and Aristotle who tells us that we only go to war to secure peace. I am afraid Prof. Sidgwick had forgotten that Plato wrote the *Laws*.

A. E. T.

Social Purpose. By H. T. W. Hetherington and J. H. Muirhead. George Allen & Unwin.

It is not surprising that at this time when the State, as an institution, may be said to be upon its trial, 'the most marked effect of the great war upon social theory' being, as Prof. Muirhead says in the book now before us (p. 50), 'the profound distrust of the State as merely the organ of a wider and more deeply rooted form of selfishness,' that thinkers who have been accustomed to regard it with feelings of a quite opposite kind, should deem themselves called upon to give an account of the faith which is in them. Prof. Watson has done this by rehearsing in the presence of existing facts the principles of Green's political philosophy in his *State in Peace and War*, Sir Henry Jones by the inspiring profession of his confidence in the power of duty strenuously followed to lead us into all political truth which he has given us in his *Principles of Citizenship*, and lastly Professors Muirhead and Hetherington in a work of larger scope than either of these, which deserves a warm welcome from all students of the subject with which it deals.

'The real problem of civic theory is,' says Prof. Muirhead (p. 38), 'not the *de facto* existence of the civic order, but the foundation of its claim to the loyalty of individual citizens' This problem is, as he points out later on (p. 91), one with that of the relation of 'the claim of the State' to 'the claim of conscience speaking in the name of an absolute human

perfection'. There is no question as to the side which would be taken by our authors in a conflict between the two. Prof. Hetherington lays it down quite clearly (p. 228) that the State 'can never claim'—rightly claim, that is—'that the individual owes his final loyalty to it, or that in its service he should be prepared to sacrifice without question the duties that he owes to other institutions'. It is 'neither the whole of Society nor necessarily the institution which is always most representative of it'. Society itself is conceived in this book, on the lines laid down long ago by Plato, as the expression on a larger scale of the spiritual nature which is manifested in each individual citizen.[1] It is clearly seen that this conception is incompatible with seeking in economic interests solely or chiefly the bonds which may unite nations in a 'Commonwealth of Man' (p. 94, cp. p. 192). 'Man and mammon,' Prof. Muirhead goes so far as to say, 'are as opposed in politics as God and mammon in religion, and the condition of the addition of all other things to the State is that it should seek first the kingdom of Man' (p. 96). The salutary influence of Greek philosophy, with its comprehensive notion of the nature of the human soul, is seen also in the valuable observation on page 53 that 'the doctrine of the unity of instinct, of which perhaps M. Bergson is the most distinguished exponent at the present time, has been part of a general movement of reaction against the view which found the source of organisation in conscious intelligence dealing with passions wholly irrational in themselves. But the lesson, which the discovery or rediscovery of unity of plans and purpose in the instinctive elements of human nature has to teach, is misread if it be interpreted, as it is by many Bergsonians, to mean a denial of the rights of thought and reason as the unifying and organising principle of human life.'

Nevertheless, although 'the foundation of the claim of the civic order to the loyalty of individual citizens' is proclaimed, as we have seen, to be 'the real problem of civic theory,' it is perhaps in respect of the meaning of *authority* in the community that one is most disposed to ask our authors for more light than they have given us. This subject is not, as such, discussed in Part I., and although in Part II. the problem, intimately connected therewith, of the relation between Church and State is treated in a very frank and interesting manner, it is not as thoroughly thrashed out as might be wished. It is stated on page 110 that these lectures are founded on the doctrine of the General Will. I venture to doubt whether a satisfactory account of the nature of political obligation can be derived from that doctrine alone. I suspect that to obtain such a satisfactory account it may be necessary not only to return (if we may so speak) from Green to Kant, by making the consciousness of obligation rather than the consciousness of a common good primary in ethics, but also to recognise, after the manner of Martineau, more emphatically than does Kant himself, the revelation in the categorical imperative of duty of a divine lawgiver, and to admit along with *autonomy* an element of what has been called *theonomy* as an essential factor therein.

The book under review abounds in good remarks, such as those on page 110 about 'the cant of personality, against which it is well to be put on our guard,' and the risk on the other hand, of making a grave mistake 'if we think we shall fare better by going to the other extreme, and the cant of personality substitute the cant of citizenship': the admirable

[1] Why, by the way, is Plato's doctrine described on page 38, in words taken from an address of Mr. Bosanquet's, as 'a great comparison of the relations between human beings in society to that between the parts of a living *body*' and not rather 'of a living *soul*'?

observations on the married life (pp. 144, 145),[1] on the effect of the distinctively national traditions of Scotland, Ireland and Wales, upon their contribution to leadership in the British Empire (p. 169), and on that of the existence of 'residential suburbs' upon the growth of a civic consciousness (p. 171); or again the observation on page 76 that 'man imitates because he is social; he is not social because he imitates'.

This short notice is far from doing justice to a very valuable contribution to social and political philosophy, but it will have served its purpose if it persuades any one to read it who would not otherwise have done so.

It may perhaps be worth while calling attention to a misprint of 'wedded' for 'welded' on page 124.

C. C. J. W.

The Principles of Christian Apologetics (Westminster Library for Catholic Priests and Students). By the Rev. T. J. Walshe. London: Longmans, Green & Co., 1919. Pp. xv, 252.

A useful little work propounding most of the current objections to Christianity, as taught by the Roman Church, with replies to them. The book should be instructive to everyone who wishes to understand the general attitude of the Roman Church to popular controversies. The one criticism I feel moved to make is that Mr. Walshe is throughout "preaching to the converted". He offers those who already hold the faith of his Church answers,—often quite good ones, so far as I can judge,—to criticisms which may be levelled at them by outsiders, but I can hardly suppose his treatise would bring much conviction to the unconvinced, since the premisses from which he reasons would in many cases not be admitted by the doubter. For example, he raises the question whether the appeal to "prophecy" is legitimate, seeing that it may be urged that the Evangelists themselves misunderstood the prophecies they cite. His answer is that the Church, in the exercise of its *magisterium*, has determined that it is inadmissible to attribute such error to the New Testament writers. But anyone who seriously believes, *e.g.*, that the Evangelists were mistaken in seeing a prophecy of the Resurrection in Our Lord's allusions to the story of Jonah would probably retort that the *magisterium* of the Church is even more in need of defence than the inerrancy of the Evangelists. As Mr. Walshe, no doubt, sees this, I cannot suppose he intends the argument to convince the outsider. If allowance is made for this peculiarity, much that is at any rate suggestive will be found in the little book.

A. E. T.

Métaphysique et Psychologie. By Theodore Flournoy. Second Edition, with a Preface by Harald Höffding. Geneva, Kundig, and Paris, Fischbacher, 1919. Pp. xvi, 195.

This volume is a re-issue of a work published by the veteran psychologist of Geneva so long ago as 1890, but, as Prof. Höffding's Preface to the new edition explains, he has unfortunately been prevented by grievous illness from revising and expanding it. Under these circumstances the interest of the book, apart from its abiding literary charm, is largely historical; but as such it is considerable. For it shows very clearly how definitely Prof. Flournoy had anticipated both the subsequent criticism of the

[1] In the discussion (pp. 158, 159) of the 'sacramental' character of marriage, it is not clear that the writer has borne in mind the fact that, according to the regular doctrine of the Church, the parties themselves and not the priest are the 'ministers of the sacrament' in this case.

principle of psychological parallelism and the discovery of the Pragmatic Method. The whole book is in the first place a sustained and brilliant argument against taking the principle of parallelism as the metaphysical solution of the problem of mind and body. He insists instead that it should be taken methodologically, as merely a postulate of mechanical experiment. Now to take an idea methodologically is to take it for what it is worth, as an instrument of research, without stopping to debate its metaphysical reality (pp. 59-60); and this of course is the way to treat *all* ideas according to the pragmatists. Accordingly Prof. Flournoy *had* to arrive at a pragmatic treatment of the principles he considers. He had to conceive them as "rules of conduct" for the researcher, as "threads of Ariadne" for traversing the labyrinth of facts, and to declare that "their practical utility takes the place of a rigorous demonstration". For whatever the logician may object from his syllogistic high horse, the researcher who has seen them at work "respects them as necessary instruments of every advance of positive knowledge" (p. 17). Principles like the law of inertia or the conservation of energy arrive at their axiomatic dignity, and "acquire the value of a principle" (p. 19), gradually and "quite prosaically by their success. Simple guesses to start with, they win the confidence of scientists by the clearness with which they illumine the chaos of phenomena, by the simplicity which they introduce into the co-ordination of the facts. Thus they rise to the rank of truths which all experiences tend to confirm, and subsequently are not slow to rise still higher and to assume an authority superior to ordinary inductive laws, and one may say, to the facts themselves. For there comes a time after which no observed facts, whatever they are, are able to refute them" (p. 18). This surely is precisely the doctrine of the evolution of postulates into axioms under pressure of experience, expressed with such felicity that I should assuredly have fortified myself with Prof. Flournoy's authority had I been acquainted with *Psychologie et Métaphysique* before writing *Axioms as Postulates*. Similarly on page 60 we find an anticipation of Vaihinger's *Als Ob*, and on page 89 of James's *Will to Believe*. Here too we find the explanation of Prof. Flournoy's discoveries. He had never allowed himself to forget that the "man of science is nevertheless a man," and that "where science, that is the intellect, is silent, his other faculties may speak and even command" (p. 89). Accordingly he can avoid the shallowness of "intellectualist philosophies" which restrict "the principle of conviction to an alleged necessity of the understanding" and fail to see that it is "not the requirements of our *cognitive* faculties which drive us to pronounce judgment on the essence of things" (p. 112).

Ultimately, of course, Prof. Flournoy's insight rests upon his personality. It was because of his richly humane and sympathetic nature that he was a friend of James, that he thought like James, and that he anticipated James. That is the amount of truth in the doctrine that a man's philosophy is relative to his personal character. But the case of Prof. Flournoy is at the same time a signal refutation of the nationalistic contention that philosophic beliefs are merely a function of racial or social factors. No doubt every community has, and usually suffers from, its academic tradition—which is often highly antagonistic to the tastes and beliefs of the masses—but there was nothing innate in the quality of Anglo-Saxon mentality to necessitate the development of pragmatism. If a Greek, or a Chinaman, or even a Hindu, had had the genius, he could have anticipated it just as easily and as completely as James, or Dewey, or the distinguished representative of French Switzerland to whose brilliant work this is a tardy tribute.

F. C. S. Schiller.

Received also :—

The Equipment of the Workers: an Enquiry by the St. Philip's Settlement Education and Economics Research Society, London, Allen & Unwin, 1919, pp. xv, 334.

Theodore Flournoy, *Métaphysique et Psychologie*, 2nd Edition, Genève, Kundig; Paris, Fischbacher, 1919, pp. xvi, 195.

Robert Briffault, *The Making of Humanity*, London, Allen & Unwin, 1919, pp. 371.

Harold J. Laske, *Authority in the Modern State*, Yale University Press, 1919, pp. x, 398.

W. S. Urquhart, *Pantheism and the Value of Life*, London, The Epworth Press, 1919, pp. xii, 732.

Israel Isaac Efros, *The Problem of Space in Jewish Mediæval Philosophy*, New York, Columbia University Press, 1917, pp. 125.

Julius Pikler, *Hypothesenfreie Theorie der Gegenfarben*, Leipzig, J. A. Barth, 1919, 2 vols., pp. viii, 138.

M. P. Follett, *The New State*, London, Longmans, Green & Co., 1918, pp. vii, 373.

Sello Vivante, *Principii di Etica*, Roma, Maglione & Stringi, 1920, pp. viii, 314.

G. R. Malkani, *The Problem of Nothing*, Amalner, The Indian Institute of Philosophy, 1918, pp. 35.

D. Raoul Mourgne, *Etude-Critique sur L'Evolution des Idées, Relatives à la Nature des Hallucinations Vraies*, Paris, Jouve et Cie, 1919, pp. viii, 67.

Giovanni Castellano, *Introduzione allo Studio delle Opere di Benedetto Croce*, Bari, G. Laterza & Figli, 1920, pp. vi, 303.

J. W. Adamson, *A Short History of Education*, Cambridge University Press, 1919, pp. xi, 371.

C. A. Richardson, *Spiritual Pluralism and Recent Philosophy*, Cambridge University Press, 1919, pp. xxi, 335.

Eustace Miles, *Self-Health as a Habit*, London, Dent & Sons; New York, Dutton & Co., 1919, pp. 341.

Hugh Elliot, *Modern Science and Materialism*, London, Longmans, Green & Co., 1919, pp. 211.

Irving Babbitt, *Rousseau and Romanticism*, Boston and New York, Houghton, Mifflin Co., 1919, pp. xxiii, 426.

R. Macmillan, *Why Do We Do It!* London, Werner Laurie, 1919, pp. 218.

Bernard Muscio, *Lectures on Industrial Psychology*, London, Routledge & Sons; New York, Dutton & Co., 1920, pp. iv, 300.

Albert Mordell, *The Erotic Motive in Literature*, New York, Boni & Liverright, 1919, pp. 250.

Henry H. Goddart, *Psychology of the Normal and Subnormal*, London, Kegan Paul, Trench, Trubner & Co., 1919, pp. xvii, 349.

Prof. Sigmund Freud, *Totem and Taboo*, translated by A. A. Brill, London, Routledge & Sons, 1919, pp. xii, 268.

Paul Oltramare, *Vivre*, Genève, Georg & Co., 1919, pp. xvi, 326.

Neery, *A Fragment of the Human Mind*, Edinburgh and London, Blackwood & Sons, 1919, pp. xv, 309.

A. T. Schofield, *The Mind of a Woman*, London, Methuen & Co., pp. vii, 120.

Emile Boirac, *The Psychology of the Future*, translated by W. de Kerlor, London, Kegan Paul, Trench, Trubner & Co., pp. ix, 322.

F. W. H. Myers, *Human Personality and its Survival of Bodily Death*, edited and abridged by S. B. and L. H. M., London, Longmans, Green & Co., 1919, pp. xiii, 307.

VII.—PHILOSOPHICAL PERIODICALS.

Psychological Review. Vol. xxvi., No. 2. **R. M. Yerkes.** 'Report of the Psychological Committee of the National Research Council.' [Deals in general with the work of the 17 sub-committees, and especially with the psychological examination of recruits, problems of aviation, selection of men with special aptitudes, problems of vision, training and discipline.] **C. E. Ferree and G. Rand.** 'Chromatic Thresholds of Sensation from Centre to Periphery of the Retina and their Bearing on Colour Theory, ii.' [The colour-tone of R and G is very little, that of Y and B is largely if not entirely dependent upon achromatic conditions; there are no invariable colours; there is no constant ratio of sensitivity to the pairs R-G, B-Y. The current logic of the Hering theory is badly at fault. Constancy of cancelling proportions with irregular distribution of sensitivity offers a real problem, which may perhaps be met by the assumption of more than one functional level or *locus*.] Vol. xxvi., No. 3. **J. B. Watson.** 'A Schematic Outline of the Emotions.' [An emotion is an hereditary pattern-reaction involving profound changes of the bodily mechanism as a whole, but particularly of the visceral and glandular systems. The original emotions are fear, rage and love. The paper discusses the methods available for the study of emotion; emotional transfers; emotional outlets; consolidation of emotion, habit, instinct; the results of physiological investigation; and the rôle of emotion in daily life.] **H. C. Warren.** 'A Classification of Reflexes, Instincts, and Emotional Phenomena.' [Tentative tables of human reflexes, instincts, instinctive tendencies, emotions and dispositions.] **H. N. Gardiner.** 'Affective Psychology in Ancient Writers after Aristotle.' [The interest is practical; the results are conditioned upon ethics and metaphysics; the formal or logical side is overstressed. In spite of these defects we see the beginnings of a science: in the biological outlook, in the emphasis laid upon bodily commotion, in the realisation of the complexity of affective problems.] **H. N. Wieman.** 'The Nature of Mentality.' [Mentality is the process whereby stimulated organic tendencies are adjusted to the performance of a series of movements resulting in adaptation to environment. If the organisation is complete, we speak of instrumental mentality; if it continues indefinitely, of creative mentality.] Vol. xxvi., No. 4. **H. H. Bawden.** 'The Evolution of Behaviour.' [The evolutionary process culminates in the hegemony of the accessory muscles, particularly those of speech. The liberation of the larynx means the building up of a world of incipient responses or symbolisations. The whole movement is aimed at contact-values; sight, hearing, smell are for the sake of touch, manipulation, enjoyment. All social institutions are thus interpretable.] **R. T. Wiltbank.** 'The Principles of Serial and Complete Response as Applied to Learning.' [Critique of Peterson. The principle of serial response needs, however, two qualifications: a second stimulus may come into play while the first is still operative; and, since successful movements must be made through the full length of the runway, and there is a constant tendency to shorten erroneous movements, the arcs involved

in the former will be more highly innervated.] **H. Carr** and **H. Koch.** 'The Influence of Extraneous Controls in the Learning Process.' [Preliminary experiments upon rats with free and controlled learning of alternate paths led to inconclusive results; control, even with the animal's motor impulse added, does not necessarily constitute a very favourable condition of learning. Further investigation is in progress.] **E. R. Wembridge** and **P. Gabel.** 'Multiple Choice Experiment Applied to School Children.' [A test-series of 15 choices (cards) applied to 100 children from 7 to 11 years of age gives a coefficient of correlation $r = 0{\cdot}48$ with mental age according to the Stanford revision of the Binet scale.] **B. Johnson.** 'Practice Effects in a Target Test: A Comparative Study of Groups Varying in Intelligence.' [Tests of three groups from a Women's State Reformatory (mental ages 15, 11, 8). The upper-grade defective shows marked capacity of improvement. Learning curves of the extreme groups show fluctuations and valleys rather than plateaus, and thus point to a differentiation of incentives; the median group has the usual form of curve. Individual curves are suggestive of temperamental types.] **H. A. Toops.** 'Plotting Equations of three Variables in Mental Measurements.' [Illustrates the use of a series of curves, common and representative series-values of a variable, to represent the variations of a dependent third variable of a mathematical equation.]

American Journal of Psychology. Vol. xxx., No. 1. **J. M. Gleason.** 'An Experimental Study of "Feelings of Relations".' [Extended experiments on 9 observers with appropriate graphic and verbal stimuli reveal neither a relational element nor a constant relational pattern of processes.] **H. Gale.** 'The Psychology of "Native Sons".' [The American who grows up and continues to live in his birthplace is doomed to a life of trivial memories, due to his boyhood's companions and environment, unless he can raise an intellectual superstructure by travel and persistent education.] **C. E. Ferree** and **G. Rand.** 'The Speed of Adjustment of the Eye for Clear Seeing at Different Distances: A Study of Ocular Functions with Special Reference to Aviation.' [Description of apparatus. There are very considerable individual differences well below the limit (apparently about 30 years) at which the influence of age becomes effective.] **E. B. Titchener.** 'An Anomalous Case of Simple Reaction.' [Analysis of a case in which instructions for sensory and motor reactions were interpreted as instructions for cognitive and sensory.] **T. Schroeder.** 'Authorship of the Book of Mormon.' [Sharp critique of Prince's theory of Smith's authorship. The book was probably written by Spaulding, and revised by Rigdon.] **R. Michaud.** 'Emerson's Transcendentalism.' [Reply to Girard. Both religiously and philosophically, and in the latter regard both metaphysically and epistomologically, Emerson represents the culmination of New England transcendentalism.] **E. S. Conklin.** 'Superstitious Belief and Practice among College Students.' [There is ample evidence, not only that the great majority of students (men 73, women 90 per cent.) entertain or have entertained superstitious beliefs, but also that the tendency is persistent, so that new superstitions are readily created.] **J. E. Downey.** 'The Psychology of Figures of Speech.' [Experiments with poetic passages. The conscious background may be sensuous (imaginal), emotional or intellectualistic; the process of appreciation is highly variable, showing coalescence, displacement, condensation, empathy, etc.] Book Notes. Vol. xxx., No. 2. 'In Memoriam: John Wallace Baird.' **G. J. Rich.** 'A Study of Tonal Attributes.' [Experiments on pure tones (variators and interference-tubes). The pure vowels neither occur at the same point for all observers nor lie an octave

apart; judgments of vocality are made upon a perceptive and not upon an attributive basis. Pitch-brightness constitutes a single attribute. Volume is a true extensive attribute, and follows Weber's Law. Tonality (musical quality) may tentatively be given the rank of attribute.] **P. F. Swindle.** 'Some Forms of Natural Training to which Certain Birds are Subjected.' [Explains the group-frequencies of beak-cleaning (ravens) and galloping (goose-eagle) from the behaviour of the birds in seizing and tearing their prey.] **P. F. Swindle.** 'Analysis of Nesting Activities.' [Hypothetical schema of bird's nesting activities, in terms of the observed simpler movement-groups of a lizard; comparative observations of *Cariama*. Discussion of relation between bodily activity and complexity of nest; relative utility (especially temporal position) of movements; simple and multiple nests; defence of nest.] **P. F. Swindle.** 'The Peristaltic-like Nature of Organic Responses.' [A study of tapping and grasping activities in man and lower animals shows that all muscular responses of long duration are discontinuous, in the sense that the nervous correlates of any given part of such response are not identical with those of any other part. This peristaltic nature of the activities permits the formulation of a law of muscular induction of the same order as the writer's previously published law of colour-induction.] **G. S. Hall.** 'Some Relations between the War and Psychology.' [(1) The war sends us back to first principles: why this reversion to primitive instincts? (2) Applied psychology has abundantly justified itself. (3) The war has raised special problems of feeling; (4) of mass psychology and mass pathology; and (5) of the unconscious. (6) America has made the greatest use of psychology in the war, but has borrowed all principles from Europe. The time is ripe for a new synthesis. (7) The true substitute for war is the conquest and control of nature by science and invention.] **F. Angell.** 'Duration, Energy and Extent of Reaction Movements: Simple and Flying Reactions.' [(1) The duration of the reaction-movement is constant, despite differences of extent, of initial tension against which the pull is made, of strength of pull, and of reaction-time. (2) The times of 'flying' reaction, in which the reaction-movement supervenes upon a gentle pull already in progress, are shorter than those of simple reaction, although the type is sensory and the movement slower; the reason is that the antagonistic muscle is already relaxed.] Book Review. Book Notes. Vol. xxx., No. 3. **H. S. Liddell.** 'Eye-Movement during Fluctuation of Attention.' [Experimental test of Ferree's hypothesis. There may be eye-movements during the phase of invisibility; there may be no distinguishable movements during fluctuation; movements may appear at random.] **H. J. Mulford.** 'What is "The Unconscious"?' [Reflex consciousness (momentary, with no before or after) and conscious consciousness use the same non-conscious machinery (the brain); but whether they clash or agree, we never perceive the unconscious at work.] **T. Schroeder.** 'The Psychologic Aspect of Free-Association.' [A chance set of free associations is used by the author to illustrate the latent content of dream and the point of view of psychoanalysis at large. To the psychoanalyst words are not symbolic of objects; they are symbols of the subjective symbolisation of related objective occurrences.] **A. A. Roback.** 'The Freudian Doctrine of Lapses and its Failings.' [Critical analysis of a number of instances of lapse. In such study, first, the words or sentences preceding and following should be examined; then, possible determining associations should be sought; only in default of cues from these sources may a new principle be invoked.] **W. T. Shepherd.** 'On Sound-Discrimination in Dogs.' [Dogs may discriminate pitches 3 octaves (perhaps, 1 octave) apart.] **'Vincent.'** 'Confessions of an Agoraphobic Victim.' [History of case and description of

subjective symptoms.] 'Minor Studies from the Psychological Laboratory of Vassar College.' **K. B. Graves, E. Heath, M. F. Washburn.** 'xxxvii. Directed Ego-centric Reactions.' [There is a noticeably greater number of free-association responses with proper names and pronouns in the case of observers who are especially prompt, when directed to do so, in recalling personal experiences.] **E. Morgan, H. K. Mull, M. F. Washburn.** 'xxxviii. An Attempt to Test Moods or Temperaments of Cheerfulness and Depression by Directed Recall of Emotionally Toned Experiences.' [There is correlation between exceeding or falling below the average number of pleasant associations on five successive days and the judgments of intimates regarding the subject's temperament.] **M. A. Walker, M. F. Washburn.** 'xxxix. The Healy-Fernald Picture-Completion Test as a Test of the Perception of the Comic.' [In general intensity of reaction and in appreciation of the pictures in their appropriate context, lower grade children surpass higher grade, and higher grade children surpass adults. Mere incongruity is most comic to the upper grade children.] **H. Baum, M. Litchfield, M. F. Washburn.** 'xl. The Results of Certain Standard Mental Tests as Related to the Academic Records of College Seniors.' [The substitution and cancellation tests show no correlation; the opposites and analogies tests show correlation, but do not decisively differentiate; the information test (number of new words) shows correlation, though some excellent students make poor records.] **M. F. Washburn.** 'A Note on the Terman Superior Adult Tests as Applied to Vassar Freshmen.' [The average judgment of instructors assigns about normal ability to the 'superior adults'.] **F. M. Kunkel and G. J. Rich.** 'Minor Studies from the Psychological Laboratory of William Smith and Hobart Colleges.' **L. Gibson, T. Hartman.** 'i. The Comparative Sapidity of Hydrochloric, Sulphuric and Acetic Acids.' [The sapidity of the two former acids depends upon their concentration in hydrogen-ions; acetic has a stronger taste than its ionic concentration would justify.] **G. J. Rich.** 'ii. The Daylight Mazda Lamp in the Psychological Laboratory.' [The lamp is dependable for class-instruction over the middle range of the spectrum, but is deficient in blue rays.] Book Reviews. Book Notes.

JOURNAL OF PHILOSOPHY, PSYCHOLOGY, AND SCIENTIFIC METHODS. xvi., 15. **S. Unna.** 'Bertrand Russell—Then and Now.' [A striking study of the psychology of a philosophic mind, which endeavours "to point out the very different implications in what is substantially one theory of knowledge, simply through a shifting of emphasis, a change of attitude". It is held that Russell's "early method was that of empiricism coupled with rigorous intellectualism" and "staunch faith in the ability of the mind to reach truth through relentless, rigid analysis". But in denying that "human values have a place in nature" and insisting that "therefore we *ought* to suspend judgment," Russell "left a value-judgment on our hands". His trend, however, was non-social and "toward intellectual individualism," which conceived thought as "a means of escape rather than an integral, organic part of experience". Now, however, he has become "interested in politics, economics, and education," and though "as much of an intellectualist as before," recognises that "the life of reason cannot bring health into the life of instinct, and this concreteness, this greater adequacy in dealing with the problems of this lesser world" is attributed to "the fact that Russell's method is now psychological rather than logical".] **W. C. Swabey.** 'Mr. Bradley's Negative Dialectic and Realism.' [Discusses "to what extent the destructive dialectic of the first book of *Appearance and Reality* . . . is really founded in logic" in the interests of 'Realism'. *Impar congressus*

Achilli.] xvi., 16. **A. C. Armstrong.** 'Philosophy and Political Theory.' [Was it Nietzsche, Fichte, Hegel, or Darwin who may be blamed for the war? No doubt "absolute metaphysics tends toward absolute politics, individualism toward liberal or radical views," but the personal circumstances of philosophers modify their views.] **J. E. Turner.** 'Dr. Strong's Panpsychic Theory of Conciousness and Perception.' [Criticises his account of 'essences,' and thinks he has not constructed 'a coherent panpsychic theory of knowledge'.] **D. Drake.** 'Panpsychism Again.' [Approves of the 'essences' but admits that "there may be a certain amount of illusion" about their given-ness—indeed any amount—and concludes by recommending Strong's books as "the keenest and completest argument for panpsychism.] xvi., 17. **J. R. Kantor.** 'Instrumental Transformism and the Unrealities of Realism.' [A careful and judicious explanation of the essential differences between instrumentalism, the old 'idealism' and the new 'realism'. "The instrumental movement represents one of the specific types of reaction to absolutism, which is slowly but persistently being forced out of philosophy. Among other reactions to absolutism, that known as new realism is characterised by the fact that it merely shifts the ground of the absolutism, and instead of conceiving reality as being behind experience, puts it into experience as absolute entities, relations or immutable laws. As over against this presentative realistic position, instrumentalism denies all absolutes, whether essences, relations, or laws," holding that "to assert the existence of any absolute thing or relation is to fly in the face of all scientific facts". For "instrumental logic is the method of science," and it is vain to attack it "because it cannot yield absolute reality," which is "an unsound fabrication".] **E. L. Schaub.** The Nineteenth Annual Meeting of the Western Philosophical Association. xvi., 18. **C. E. Ayres.** 'Thomas Hobbs and the Apologetic Philosophy.' [Hobbes, who is compared with W. G. Sumner, was decried by all parties because his theory implied the relativity of all social institutions, and so shocked all who, to defend the *status quo*, wanted to conceive them as absolute.] **R. B. Owen.** 'Teleology and Pragmatism.' [Comment on Warbeke in xvi., 8. "Because reality *as known* is teleological is no proof that reality as such is."] **E. E. Sabin.** 'Pragmatic Teleology.' [Points out that pragmatism is a wider term than humanism, and defends James in detail against Warbeke's criticisms.] xvi., 19. **A. H. Lloyd.** 'The Function of Philosophy in Reconstruction.' ["A sensuous realism, then, but qualified as a mediate realism and again as an immediate dualism is what I am disposed to regard as the logical philosophy of the present era."] **F. R. Bichowsky.** 'The Concepts of Class, System, and Logical System.' ["We wish merely to point out that logical systems exist, and that all logic and all science are necessarily examples of them, and also to point out that no purely extensional logic can account for the existence of logical systems or their properties, thus placing extensional logic in the uncomfortable position of not being able to account for the very charac, teristic, namely, that theorem unambiguously follows from postulate-which makes it a science at all."] xvi., 20. **H. C. Brown.** 'The Definition of Logic.' [Logics are descriptions of the best methods for arriving at the desideratum called 'truth' at various times and under various conditions, and differ accordingly. The logic we now require is one for investigation and this the instrumentalist logic provides. Realistic logic is based on a fixity of terms and relations which has been antiquated by Darwinism; it is "nothing but an extension of mathematics". Hence no definition of logic can be final. The present instrumentalist conception of logic, though at home in the region of applied science, "is naturally disquieting to the ultra-conservative, distasteful to the ethic

temperament, and resisted by orthodox theologians".] **A. Thalheimer.** 'Purpose.' ["The simple thesis that there is a purpose in organic and perhaps inorganic phenomena relies merely upon a description of the qualities the entities held to be purposive have in common and upon the assertion that purpose is a thing that is given in these qualities or that is to be inferred from them. It is a thesis that neither necessarily denies the existence of efficient causes nor offers a substitute for them." Hence final causes are scientifically 'harmless'. "If they exist they are no substitutes for efficient causes: yet if they exist, the concept of purpose has a place in science as well as in philosophy."] **F. C. S. Schiller.** 'Methodological Teleology.' [Replies to Warbeke in xvi., 8. (1) Teleology is not for pragmatism a metaphysical dogma but a methodological assumption, and one moreover which all philosophies must make, more or less openly. Nor is it more *ex analogia hominis* than causal explanation. (2) The supremacy of the Good over the Real and the True, similarly, only means that all questions are ultimately questions of *values*. But (3) the teleological sense of 'good' must not be confused with the ethical, nor must pragmatism be expected to set up an ultimate standard of good for every one, in disregard of the actual variations in the ends sought and the goods pursued by men at present.]

Revue de Métaphysique et de Morale. Mai-Juin, 1919. **G. Milhaud.** 'La question de la sincérité de Descartes.' [No serious question arises—if we exclude the very doubtful accusation of plagiarism over the law of refraction—except in the treatment of the earth's motion in the *Principes*. It seems at first sight that D. here invents a preposterous definition of proper motion in order to be able to reconcile a Copernican theory with a Ptolemaic mode of expression. Yet in the *Monde*, written before Galileo's condemnation, traces of the same sense of proper motion occur, and we may therefore presume that D. really believed it to be important.] **A. Reymond.** 'Sur une définition possible des ordinaux transfinis.' [First criticises Cantor's theory of transfinite ordinals by confusing ordinals with cardinals and speaking of them as 'having a power of cardination' which diminishes as we move along the series. Then proceeds to erect a new definition of ordinals on this confusion. The author seems never to have heard of ordinal similarity nor to know that it is the basis of ordinal types. Quite worthless.] **É. Bourguet.** 'Sur la composition du *Phèdre*.' [Defends the dialogue against H. Raeder's accusations of incoherence The first discussion on love represents the stage of mere guessing by its fundamental error and its imperfect form; the second, which at least starts with a definition, corresponds to the stage of false opinion backed by plausible argument; the third represents true opinion in the form of myth; and the rest of the dialogue represents the obtaining of genuine knowledge by dialectic. The whole is put together with exquisite skill.] **R. Lenoir.** 'La doctrine de Ravaisson et la pensée moderne.' [A description of R.'s philosophy, which was akin to Schelling's, elevates sentiment above analysis, and makes much play with æsthetic emotions though it gives but a conventional theory of æsthetics. Its only value for us is as a protest against too narrow a conception of thought; but R.'s is not the right remedy. 'Thought can become more supple . . . and it is not in the particular individual that the real becomes intelligible.'] **J. Nicod.** 'Le *Traité de Logique* de Goblot.' [G. attempts to define the laws of logic as the psychological laws of a pure intellect, and to define logical necessity by capacity for being universally believed. Both definitions are inadequate, and, when carefully analysed, become circular. He rejects relational propositions on grounds which seem to M. Nicod (and

the present abstractor) wholly inadequate. Goblot thinks erroneously that the logic of relations would split the science into two parts with nothing in common; he fails to see that there is much analogy between the logic of classes and that of relations, and that there is a form of syllogism appropriate to both. He also fails to see the important distinction between material and formal implication. Goblot rejects formal reasoning as sterile on much the same grounds as Mill. M. Nicod has little difficulty in refuting such arguments, but praises highly Goblot's criticisms of 'reasoning by recurrence' beloved by H. Poincaré. Goblot ascribes the fertility of deduction to a happy choice and combination, not of propositions, but of things or symbols. M. Nicod replies that at best this only describes a psychological process which often accompanies deduction, and that in any case 'we must not mix up concepts and ink-lines.' Goblot holds that induction involves determinism, but that the latter cannot be self-evident since many people believe in undetermined free-will. M. Nicod agrees with the latter but demurs to the former contention. Perhaps a belief in determinism is not logically necessary to induction (which at best can only give probable conclusions) but only psychologically necessary to induce observers to set to work.] **G. Mouret.** 'A propos de l'entropie.' [A correction of a misunderstanding by M. Selme of the author's view of entropy.] **E. Rignano.** 'Sur la méthode d'enseignement des mathématiques et des sciences pour la formation du futur maître.' [A plea for more concreteness in the teaching of natural science and of mathematics. Mathematical reasoning is really a series of very simple experiments and observations. The teacher should have a thorough grounding in a really honest and scientific psychology.] **G. Aillet.** 'La "force majeure" et la guerre.' [The legal notion of '*force majeure*' cannot be satisfactorily defined either wholly subjectively or wholly objectively. If you only allow it to exist where no actual fault of the least degree can be assigned you make the obligations of debtors, lessees, etc., far too onerous. And on the other hand you make those of carriers, hôtel-keepers, etc., far too light. If you pay no attention to the intentions and behaviour of the interested parties you reach equally absurd results; for a man might claim release from a contract simply because the discharge proved more burdensome than he had anticipated. Legal decisions in connexion with the war have cleared up the notion of '*force majeure*' and show that the really relevant factor is the normal and rationally predictable variations in the conditions of a given industry. Variations beyond these limits constitute '*force majeure*' and have to be met by altering the obligations of the contracting parties so that the risks do not fall unconscionably on one party or one class of contractors such as lessees or workmen. (A most able article like all the legal papers in this Review.)]

ZEITSCHRIFT F. PSYCHOLOGIE. Bd. lxxx., Heft 4, bis 6. **C. Buehler.** 'Ueber Gedankenentstehung: Experimentelle Untersuchungen zur Denkpsychologie.' [Experiments performed for the most part under Kuelpe's direction at Munich. The main series deals with "sachlich-logisches Beziehen und Zusammenfassen," as illustrated by the construction of sentences from isolated words. Four types of procedure are distinguished: (1) the analytical starts out from a comprehensive concept which is analysed by its relations, so that the parts are discovered in the whole; (2) the synthetical, on the contrary, builds up a term as principal term by discovering relations into which it may be brought, so that the whole is constructed from its parts. The result, in both these cases, is a combining (*Zusammenschluss*) of the words into a complex. (3) Another type ends with

a relation between two equally important complexes; the relation is the central feature. This procedure may again be called analytical, as distinguished (4) from a synthetical, in which the to-and-fro movement among numerous relations leads to the emergence of a principal relation, that was at best implicit until the construction was undertaken.] **J. Lindworsky.** 'Wahrnehmung und Vorstellung.' [There is no single attributive character whereby perception and idea may be distinguished. But the collocation of attributes may, in extreme cases, lead to a comparison, whose result is fixed in the form of absolute impression; presence of the causal stimulus and permanence (reality) may then serve as further indices of difference. This genetic explanation, in terms of secondary functions, is adequate to the various modes of illusion, as well as to the pathology of perception.] **H. K. Schjelderup.** 'Ueber die Abhaengigkeit zwischen Empfindung und Reiz.' [Starting from certain simple physiological assumptions, the author works out a theory of retinal adaptation and recovery (including the Fechner-Helmholtz law of negative after-images), and from this proceeds to a new metric formula which bears the test of experiment. The underlying ideas are akin to those of Lehmann.] Literaturbericht. Bd. lxxxi., Heft 1, bis 3. **H. Henning.** 'Experimentelle Untersuchungen zur Denkpsychologie. i. Die assoziative Mischwirkung: Das Vorstellen von noch nie Wahrgenommenem und deren Grenzen.' [This is the first of a series of experimental studies which are to set forth the psychology of thought and volition from the standpoint of associationism, apparently in close relation to the views of G. E. Müller. The method, which is novel, reduces in essentials to the following plan: a word is presented, and then after a variable interval a second word, whereupon the observer (under widely varying instruction) responds by a third word; the intervention of the pause and the presentation of the second stimulus-word secure the observation and report of many phases and stages of thought that have baffled the Würzburg experimenters. This instalment deals with associative mixture, the effects of which it classifies and illustrates in detail, and with the mechanism and limits of ideas of 'imagination,' in the sense of ideas whose phases or components have never been given together in perceptive experience. Under the latter heading are discussed ideas of sight (size, colour, appearance, and behaviour of a person, form, material of objects, movement), sound, touch, taste, and smell; the effect of contradictory instructions; attitudes and restrictions (*Fesselungen*).] Literaturbericht.

NOTE.

WHAT DOES BERGSON MEAN BY PURE PERCEPTION?

Mr. Harward says that his original note on this subject, in the April, 1918, number, was not intended as an attack on M. Bergson. I should like to say that my reply in the October, 1918, number was not intended as a defence of M. Bergson. Nothing could be much more absurd than that two independent critics should enter into a controversy as to the consistency or inconsistency of the thoughts or words of a contemporary writer to whom either can address a postcard. My intention was quite different, whatever impression I may have left on the reader. It really surprised me that anyone reading M. Bergson's *Matière et Mémoire* should have formed so different a notion of his theory of perception from that which I had formed, and my object was not to defend M. Bergson but to give my version of a doctrine which has always appealed to me as particularly luminous—I will not say lucid in view of Mr. Harward's very real difficulties. I do not propose to deal with those difficulties and obviously I could not in a few short sentences. I only wish, therefore, to add a word to my previous note suggested by the sentence in Mr. Harward's reply: "Memory is already rather hard worked in M. Bergson's system, but surely here we have got beyond the limit of its powers" (Oct., 1919, p. 469). The sentence is a challenge addressed to me, but its effect is to reveal to me, as in a flash, the whole difficulty and the difference between Mr. Harward's view and mine. I see now that our minds are directed on different problems. Mr. Harward wants to determine the nature of perception recognised as an isolated phenomenon. My problem, and I think Bergson's, is the relation of perception to memory. The classical philosophical doctrine is that memory is conditioned by perception and that perception is logically prior to memory; that perception exists independently in its own right, but that memory cannot so exist being dependent on previous perception. Bergson's theory, as I apprehend it, is that the exact converse is true. Memory is the fundamental fact of mind and perception depends on it. The theory may be wrong, I am not proposing now to defend it, but it seems to me clear that had Mr. Harward grasped it, he could not have written the sentence I have quoted. For Bergson there is no "pure" perception in the meaning of a sense impression which brings its own apport. Perception provides "a frame" into which memory inserts an image.

H. Wildon Carr.

MIND ASSOCIATION.

The following is the full list of the officers and members of the Association :—

OFFICERS.

President—Prof. J. A. SMITH.

Vice-Presidents—Profs. B. BOSANQUET, H. WILDON CARR, T. CASE, G. DAWES HICKS, F. B. JEVONS, J. H. MUIRHEAD, A. S. PRINGLE-PATTISON, C. READ, W. R. SORLEY, and J. WARD, Dr. J. M. E. McTAGGART, and The Very Rev. Dr. HASTINGS RASHDALL.

Editor—Prof. G. F. STOUT.

Treasurer—Dr. F. C. S. SCHILLER.

Secretary—Mr. H. STURT.

Guarantors—The Right Hon. A. J. BALFOUR, Viscount HALDANE, and Mrs. HENRY SIDGWICK.

MEMBERS.

Alexander (Prof. S.), The University, Manchester.
Anderson (W.), Logic Department, The University, Glasgow.
Baillie (Prof. J. B.), King's College, Aberdeen.
Bain (Mrs.), 50 Osborne Place, Aberdeen. *Hon. Member.*
Bain (J. A.), 37 Widdrington Terrace, North Shields.
Balfour (Rt. Hon. A. J.), Whittingehame, Prestonkirk, N.B.
Baral (Prof. S. N.), Gaurisankar-Saeter, Lille Elvedalen, Alvdal, Norway.
Barker (H.), The University, Edinburgh.
Benecke (E. C.), 182 Denmark Hill, London, S.E.
Benett (W.), Oatlands, Warborough, Wallingford.
Berkeley (Capt. H.), 304 Woodstock Road, Oxford.
Blunt (H. W.), 183 Woodstock Road, Oxford.
Bonar (J.), 1 Redington Road, Hampstead, N.W.
Bosanquet (Prof. B.), Heath Cottage, Oxshott, Surrey.
Bowman (Prof. A. A.), Princeton University, N.J., U.S.A.
Bradley (F. H.), Merton College, Oxford.
Braham (Rev. E. G.), Mayfield Lees, nr. Keighley, Yorks.
Bren (Rev. R.), 68 Wheeleys Road, Edgbaston, Birmingham.
Brett (Prof. G. S.), Trinity College, Toronto, Canada.

Brough (Prof. J.), Hampden House, London, N.W.
Burnet (Prof. J.), The University, St. Andrews, N.B.
Cameron (Rev. Dr. J. R.), Park Manse, Helensburgh, N.B.
Carpenter (Rev. Dr. J. E.), 11 Marston Ferry Road, Oxford.
Carr (Prof. H. W.), 107 Church St., Chelsea, S.W. 3.
Case (T.), Corpus Christi College, Oxford.
Cobb (Rev. Canon W. F. Geikie), 40 Cathcart Road, S.W. 6.
Coddington (F. J. O.), Training College, Sheffield.
Coit (Dr. S.), 30 Hyde Park Gate, London, S.W.
Cole (G. D. H.), Magdalen College, Oxford.
Cook (S. A.), 26 Lensfield Road, Cambridge.
Cooke (H. P.), Clevelands, Lyndwode Road, Cambridge.
Cooke (Dr. R. B.), Cornell University, Ithaca, U.S.A.
D'Arcy (Rev. M. C.) Ore Place, Hastings.
Davidson (Prof. W. L.), 8 Queen's Gardens, Aberdeen.
Dessoulavy (Rev. Dr. C.), Pennybridge, Mayfield, Sussex.
Dixon (Capt. E. T.), Racketts, Hythe, Hants.
Dorward (A. J.), Queen's University, Belfast.
Douglas (C. M.), Auchlochan, Lesmahagow, Lanarkshire.
Douglas (Prof. W.) Rangoon College, Burmah.
Dunlap (Prof. K.), Johns Hopkins University, Baltimore, U.S.A.
Edgell (Miss B.), 15 Lyon Road, Harrow.
Edward, Rev. Dr. K., Mansefield, Peebles.
Eliot (Sir C. N. E.), K.C.M.G., The British Embassy, Tokio, Japan.
Farmer (Rev. H. H.) 69 Lichfield Road, Stafford.
Fawcett (E. D.), Châlet Ramel, Château d'Oex, Switzerland.
Field (G. C.), The University, Liverpool.
Forsyth (Prof. T. M.), Grey College, Bloemfontein, South Africa.
Fremantle (H. E. S.), Cottesloe, P. O. Selborne, District Uitenhage, Cape Colony.
Gallagher (Rev. J.), Crowton Vicarage, Northwich.
Galloway (Principal G.), St. Mary's College, St. Andrews, N.B.
Gibson (Prof. J.), Bron Hwfa, Bangor, Wales.
Gibson (Prof. W. R. B.), The University, Melbourne, Australia.
Goldsborough (Dr. G. F.), Church Side, Herne Hill, S.E.
Granger (Prof. F.), University College, Nottingham.
Haldane (Rt. Hon. Viscount), 28 Queen Anne's Gate, London, S.W.
Hampton (Prof. H. V.), Gujarat College, Ahmedabad, India.
Hardie (R. P.), 13 Palmerston Road, Edinburgh.
Harvey (J. W.), The University, Birmingham.
Headly (L. C.), House on the Hill, Woodhouse Eaves, Loughboro'.
Henderson (C. G.), Ratnagiri, India.
Hetherington (Prof. H. T. W.), University College, Cardiff.
Hicks (Prof. G. D.), 9 Cranmer Road, Cambridge.
Hoernlé (Prof. R. F. A.), Harvard University, Cambridge, Mass., U.S.A.
Ingham (C. B.), Moira House, Eastbourne.
James (Rev. J. G.), Flowerdale, Potters Road, New Barnet.
Jevons (Dr. F. B.), Bishop Hatfield's Hall, Durham.
Joachim (Prof. H. H.), New College, Oxford.

Jones (Miss E. E. C.), Meldon, Weston-super-Mare.
Jones (Prof. Sir H.), 1 The College, Glasgow.
Jones (Rev. Dr. W. Tudor), 14 Clifton Park, Bristol.
Joseph (H. W. B.), New College, Oxford.
Keane (Rev. H.), Stonyhurst College, Blackburn.
Keatinge (Dr. M. W.), 40 St. Margaret's Road, Oxford.
Keynes (Dr. J. N.), 6 Harvey Road, Cambridge.
Kirkby (Rev. Dr. P. J.), Saham Rectory, Watton, Norfolk.
Knox (Capt. H. V.), 3 Crick Road, Oxford.
Laird (Prof. J.), Queen's University, Belfast.
Latta (Prof. R.), 4 The College, Glasgow.
Librarian (The), Bedford College, Regent's Park, N.W.
Lindsay (A. D.), Balliol College, Oxford.
Loveday (Prof. T.), Armstrong College, Newcastle-on-Tyne.
McDougall (W.), C.C.C., Oxford.
McIntyre (Dr. J. L.), Abbotsville, Cults, Aberdeenshire.
McIver (Prof. R. M.), The University, Toronto, Canada.
Mackenzie (Prof. J. S.), 56 Bassett Road, North Kensington, W.
Mackenzie (Sir W. L.), 4 Clarendon Crescent, Edinburgh.
Mackintosh (Prof. H. R.), 81 Colinton Road, Edinburgh.
McTaggart (Dr. J. M. E.), Trinity College, Cambridge.
Mair (Prof. A.), 26 Parkfield Road, Liverpool.
Marett (Dr. R. R.), Exeter College, Oxford.
Marriott (Rev. S. J.), Netherton Vicarage, Dudley.
Marshall (Mrs. D. H.), Ovingdean Hall, Brighton.
Marshall (H. Rutgers), Century Assn., 7 West 43rd Street, New York.
Moberly (W. H.), Lincoln College, Oxford.
Moore (Dr. G. E.), Trinity College, Cambridge.
Morrison (D.), The University, St. Andrews, N.B.
Morrison (Rev. Dr. W. D.), 38 Devonshire Place, London, W.
Muirhead (Prof. J. H.), The University, Birmingham.
Murray (D. L.), 11 Antrim Mansions, Haverstock Hill, N.W.
Murray (J.), Christ Church, Oxford.
Nunn (Dr. T. P.), Day Training College, Southampton Row, W.C.
Oakeley (Miss H. D.), Passmore Edwards Settlement, Tavistock Place, W.C.
Osgood (G. L.), Coombe Field, Godalming.
Parkinson (Rev. Dr. H.) Oscott College, Birmingham.
Paton (H. J.), Queen's College, Oxford.
Pickard-Cambridge (W. A.), Worcester College, Oxford.
Pollock (Sir F.), Bart., 21 Hyde Park Place, London, W.
Prichard (H. A.), Trinity College, Oxford.
Pringle-Pattison (Prof. A. S.), The Haining, Selkirk, N.B.
Quick (Rev. O. C.), Nutfield House, Kenley, Surrey.
Ranade (Prof. R. D.), Fergusson College, Poona, India.
Rashdall (Very Rev. Dr. H.), The Deanery, Carlisle.
Read (Prof. C.), Psychological Laboratory, University College, W.C.
Robinson (Prof. A.), Observatory House, Durham.
Rogers (R. A. P.), Trinity College, Dublin.

Ross (Prof. G. R. T.), Government College, Rangoon, Burma.
Ross (W. D.), Oriel College, Oxford.
Russell (Hon. B.), Trinity College, Cambridge.
Russell (L. J.), Brousterland, East Kilbride, Lanarkshire, N.B.
Ryle (Dr. R. J.), 6 Chesham Place, Brighton.
Sanday (Rev. Canon), 18 Bradmore Road, Oxford.
Saunders (Prof. L. P.), c/o Grindley & Co., 54 Parliament Street, Westminster, S.W.
Schiller (Dr. F. C. S.), Corpus Christi College, Oxford.
Scott (J. W.), Acre Cottage, Clynder, Dumbartonshire.
Seth (Prof. J.), 20 Braid Avenue, Edinburgh.
Shand (A. F.), 1 Edwardes Place, London, W.
Shearman (Dr. A. T.), University College, London, W.C.
Shelton (F. D.), Bruce, Alberta, Canada.
Shelton (H. S.), 98 Braybrooke Road, Hastings.
Shields (Miss F. R.), 131 Kennington Road, London, S.E. 11.
Sidgwick (A.), Trewoofe Orchard, St. Buryan, Cornwall.
Sidgwick (Mrs. H.), 27 Grange Road, Cambridge. *Hon. Member.*
Smith (A. H.), New College, Oxford.
Smith (Prof. J. A.), Magdalen College, Oxford.
Smith (Prof. Norman Kemp), The University, Edinburgh.
Snellman (J. W.), 8 Birgerjarlsgatan, Stockholm, Sweden.
Sorley (Prof. W. R.), St. Giles, Chesterton Lane, Cambridge.
Stewart (Prof. H. L.), Dalhousie University, Halifax, Nova Scotia.
Stewart (Prof. J. A.), 14 Bradmore Road, Oxford.
Stocks (J. L.), St. John's College, Oxford.
Stokes (Prof. G. J.), Queen's College, Cork.
Stout (Prof. G. F.), Craigard, St. Andrews, N.B. *Hon. Member.*
Strong (Prof. C. A.), c/o Crédit Lyonnais, 19 Boulevard des Italiens, Paris.
Sturt (H.), 5 Park Terrace, Oxford.
Sugimori (Prof. K.), 1 Upper Belgrave Road, Clifton, Bristol.
Sutcliffe (J. W.), 14 Clifton Road, Halifax, Yorks.
Temple (Rev. Canon W.), The Cloisters, Westminster Abbey, S.W.
Thorburn (W.), 2 Crick Road, Oxford.
Titchener (Prof. E. B.), Cornell University, Ithaca, N.Y., U.S.A. *Hon. Member.*
Underhill (G. E.), Magdalen College, Oxford.
Walley (J. T.), Chardleigh Green, Chard, Somerset.
Ward (Prof. J.), 6 Selwyn Gardens, Cambridge.
Warren (Mrs. Fiske), 8 Mount Vernon Place, Boston, U.S.A.
Waterlow (S. P.), 3 Temple Gardens, London, E.C.
Watt (W. A.), 183 St. Vincent Street, Glasgow.
Webb (C. C. J.), Magdalen College, Oxford.
Widgery (Prof. A. G.), The College, Baroda, India.
Williams (Rev. Dr. H. H.), St. Edmund Hall, Oxford.
Williamson, (C. C. H.) 7 Park Mansions, South Lambeth Road, S.W. 8.
Wilson (S. F.), 2 Sherwood Street, Warsop, Mansfield, Notts.
Woods (Miss A.), St. Ives, Cross Path, Radlett, Herts.

Those who wish to join the Association should communicate with the Hon. Secretary, Mr. HENRY STURT, 5 Park Terrace, Oxford; or with the Hon. Treasurer, Dr. F. C. S. SCHILLER, Corpus Christi College, Oxford, to whom the yearly subscription of sixteen shillings should be paid. In return for this subscription members receive MIND gratis and post free, and are entitled to buy back-numbers both of the Old and the New Series at half price. Members resident in America can pay their subscription ($4) into the account of the Hon. Treasurer (Dr. F. C. S. Schiller) at the Fifth Avenue Bank, 44th Street, New York.

New Series. No. 114.] [April, 1920.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—SENSE-KNOWLEDGE (III.).

By Professor James Ward.

Perceptual Orders: (ii. Time).

§ 7. Here again we have first to recall the essential factors in the genesis of temporal perception, and then to discuss the connexion between temporal perception and the conception of time.

We are apt to regard the temporal and spatial orders as resembling each other in respect of form and origin more closely than in fact they do. Since change of presentation is involved in even the simplest experience, and time is held to be involved wherever there is change, the *perception* of time has come to be regarded as at least coeval with that of space. Yet such is not necessarily the case; and could only be so if change of presentation were the same thing as presentation of change. But the difference between the two is vast. Nor are the perceptions of the two orders in fact coeval. The continuum to which the perception of time belongs, as already said, is psychologically that secondary continuum—*when in process of formation*—to which the name of memory-thread has been given.[1] Again it has more than once been proposed to lump space and time together as one continuum of four dimensions. It is, however, doubtful if this is allowable as more than a mathematical convention: if even as that, when time is also regarded as the one independent variable. At any rate such a procedure seems incompatible with perceptual

[1] It is given because it is the basis on which the development of memory proper rests; though it does not directly imply what is strictly to be called memory.

experience. Still, despite important differences, the perception of time has many analogies with that of space.

Thus we find in the perception of time, as we have found in the perception of space, a factor that disappears from their concepts. But the two factors are very different: there it was extensity—which is objective; here it is what we have called protensity—which is essentially subjective. It is through this that we ascribe to sense-data the characteristic of duration, and so speak of that too as protensity. It was Locke's merit that he made this duration the fundamental factor in temporal perception and compared 'the simple modes' of duration with 'the simple modes' of space[1]—the one as the ideas 'we have of *perishing* distance, of which no two parts exist together,' the other the ideas 'we have of *lasting* distance, all of whose parts exist together'.[2] But 'perishing' seems at first sight a very incongruous epithet to apply to duration itself, and Locke's use of it is the more surprising when we recall an earlier passage in which he makes this characteristic remark: "If the names of things may at all direct our thoughts towards the originals of men's ideas (as I am apt to think they may very much) . . . the name duration [may suggest] that the continuation of existence with a kind of resistance to any destructive force, and the continuation of solidity, which is little different from hardness . . . have some analogy, and gave occasion to words so near akin as *durare* and *durum esse*".[3] But this analogy has nothing in common with the idea of distance, least of all with that of '*perishing* distance'. So for the present we must leave it aside. After all we have then to recognise that duration according to Locke is primarily for us 'just another sort of distance' differing from that of space only in the fact that its so-called 'parts' are not static or simultaneous but perpetually flowing or successive.[4] But he has still a subtle point in reserve. It is these fleeting parts of duration that make time; for "duration as set out by certain periods and marked by certain measures or epochs, is that," he thinks, "which most properly we call time".[5] But having once got such a measure of duration as the diurnal and annual revolutions of the sun—at the conceptual level, that is to say—we come at length to talk of duration 'before all time' or 'when time shall be no more'—endless and empty duration, the purely conceptual time of science, in other words. But that is not the duration with which we begin.

[1] *Mode*, however, is in neither case the appropriate term.
[2] *Cf. Essay* II., xv., § 12. [3] *Ibid.*, § 4. [4] *Ibid.*, xiv., § 1.
[5] *Ibid.*, § 17. However he often forgets this distinction.

That Locke was perfectly aware of this, he clearly shows when proceeding to 'consider what idea it is we have of *duration* and how we came by it'. In this inquiry he brings out another important fact of temporal perception. True, he also involves himself in the contradiction already mentioned;[1] and the contradiction is here more flagrant, for among the simple modes of duration the very first that he mentions directly involves relation. Still this by the way: what is now noteworthy in Locke's inquiry, the following passage will show: "It is evident," he continues, "to anyone who will but observe what passes in his own mind, that there is a train of ideas which constantly succeed one another . . . [there] as long as he is awake. Reflexion on these appearances of several ideas one after another . . . is that which furnishes us with the idea of *succession;* and the distance between any parts of that succession . . . is that we call *duration.* For whilst we receive successively several ideas in our minds, we know that we do exist; and so we call . . . the continuation of the existence of ourselves, or [of] anything else commensurate . . . [with such succession], the duration of ourselves or [of it]."[2] There are two points to note here: (1) that Locke realised that for us filled or perceptual duration comes first, and (2) that its measure is subjectively not objectively determined; determined, *i.e.*, by the rate at which we can observe ideas or appearances to be successive. Accordingly he presently refers to this as explaining our inability to perceive motions that are either very slow or very swift as compared with this rate.

Still it cannot be said that Locke succeeded in reaching what we may call the essence of duration, or in making clear the precise connexion between it and 'the succession of ideas in our minds'. As regards duration Spinoza before him did better. Here is his definition: "Duratio est attributum, sub quo rerum creatarum existentiam, *prout in sua actualitate perseverant,* concipimus".[3] Duration, in fact, as experienced is inseparable from the activity that all experience implies: it means not barely to exist but actively to persevere or persist. We may say that we experience it as a peculiar subjective intensity correlative to that objective intensity which we regard as the matter or 'that' of our sense-data.[4] Protensity

[1] In discussing his treatment of space, *cf.* last article, vol. xxviii., p. 456 *fin.*

[2] *Cf. Essay* II., xiv., § 3.

[3] *Cogitata metaphysica,* 1653, I., iv., Van Vloten and Land's *Opera,* ii., p. 472. Italics mine.

[4] *Cf.* first article, vol. xxviii., p. 274 *fin.*

and intensity are, in fact, mutually involved. "What the term duration ultimately represents," as I have said elsewhere, "is our immediate experience as actively striving and wearing on: it implies the actual living, which only is *actual* in so far as it is . . . full of changes endured or wrought."[1] Protensity is not, as extensity is, a sense-datum, though we ascribe it to sense-data. But like extensity it is continuous; and we may even say that it is differentiated, or rather that it differentiates itself. Further, though these primary differentiations are not co-existent, yet they give rise to a secondary continuum that may be so described—the memory-thread already mentioned. The differentiations of this, however, have their spatial analogue not in local signs of indefinite dimensions, but in a one-dimensional continuum of positional signs which we call 'temporal' signs. Like the positional signs of spatial perception we may find that they imply movement, but not space. It is these temporal signs that first lead us to the perception of time-order. Protensity, in fact, is not itself time any more than extensity is itself space: like that it is only one fundamental factor, and to call it 'a mode of time,' as Kant, for example, does, is as misleading as to call time 'a mode of duration,' as Locke did.

But time-order alone does not seem to imply time-distance as length or measure; though time-distance implies time-order. This, however, is a distinction we are apt to overlook, because of our prepossessions as to the priority of clock-time—prepossessions of which we ought in this inquiry completely to divest ourselves. Berkeley was here more precise than Locke. Thus he said: "Time being nothing, abstracted from the succession of ideas in our minds, it follows that the duration of any finite spirit must be estimated by the *number of ideas or actions succeeding each other* in that same spirit or mind".[2] This would make time discrete. Berkeley, however, overlooked the fact that, though our acts of attending are discrete, attention in the wider sense is continuous. The *focus* of consciousness alters at an approximately constant rate, yet the *field* of consciousness is by comparison permanent. The discrete acts are the acts of one continuously enduring subject.[3] It was the selection of some definite part of the field of consciousness for closer or more concentrated attention that led psychologists to confer upon this part the

[1] *The Realm of Ends*, 3rd ed., p. 306.

[2] *Principles of Knowledge*, Pt. I., § 4. Fraser's ed., vol. i., p. 206. Italics mine.

[3] *Cf.* first article, p. 265, and *Psychological Principles*, pp. 71 f., 219 ff.

distinction of the 'focus' that is 'apperceived' in contrast to the rest of the field that is barely 'perceived'. Here, so far, there is only a difference of degree. But it is a difference that is due to the action of the selecting subject; and we may even say this, when such acts are non-voluntarily determined; for the self-conserving 'perseverance' or *conatus* of the experient subject is still implied. It is usual to describe these acts as 'movements of attention,' and there is ample justification for so doing. This, however, is not the place for setting out the evidence.[1] Such movements obviously occupy a portion of clock-time, and are measurable in terms of this. They have, in fact, been measured experimentally with minute exactitude and under very various conditions. But perceptually they are neither measured nor measurable; for they are not themselves in turn 'set out and marked by' any succession. Yet these movements yield what for individual experience is an absolute time-measure or unit, corresponding to 'the [clock-] time of only one idea in our minds, without the succession of another'. And this, Locke said, is 'what we call an instant'.[2] It is then not 'what we most properly call time' but only a position or point not a portion of time, as in space a point is only a position not a portion of space. But instant and movement are incompatible ideas: *moment*, an older and happier term, is alone appropriate here; and the fact that Locke did not use it shows how imperfectly after all he realised the importance of movements of attention in the genesis of temporal perception. It is these movements or moments that determine what we call our *tempo* or 'normal perceptual time'.[3]

The temporal signs that constitute the memory-thread as a comparatively permanent continuum now seem to be reasonably accounted for as the consequences or residua of those

[1] Some account of this will be found in *Psychological Principles*, under various heads. *Cf.* the Index, *s.v.*, Attention.

[2] *Cf. Essay* II., xiv., § 10.

[3] The connexion of this with intensity is an everyday experience. Like a stream, the shallower or less intense that is the faster it flows; similarly the deeper or more intense this is, the slower it flows—*cæteris paribus*. The subjective, that is to say, the individual character of the whole process is strikingly shown in the very different estimates formed of the actual lapse of clock-time under different circumstances—such as those of tedium or 'boredom' on the one hand, and those of play, 'pastime' or some absorbing interest on the other. Experimental measurements in such cases would doubtless yield some surprising results, if, for example, five minutes spent in impatiently waiting for a train that is late were compared with five minutes spent in solving a congenial problem.

same movements of attention on which *tempo* depends. In the *process of forming* this continuum, as was said at the outset,[1] we can discern all the factors involved in time-perception. But it is only when the formation is complete that distance in the past is ascribed to what is no more, and distance in the future to what is not yet. So we reach a simultaneous representation of time as a line or length, in which certain events have fixed positions—a representation from the standpoint of the *now* which may fairly be called 'time-perspective'; for, though it may occupy but one moment, it represents a duration that has lasted (or will last) through many. True, it is not attained till comparatively late, and the lower animals seem never to advance so far; yet it is rightly to be classed as sense-knowledge, for it presents a concrete order, a definite filled time. We only attain to the concept of 'pure' temporal order when the filling and the varying *tempi* of this actual experience are left out, and we put in its place Newton's absolute time flowing always at a constant rate.

It is obvious that there can be nothing empirically objective to correspond to such a concept. How then, if we deny its derivation from perceptual experience, are we to account for it? This question brings us again to Kant. His epistemology of time has the same merits and the same defects as those already noticed in his epistemology of space. Here again he rightly insists on the intuitive or perceptual character of temporal relations; but again he proceeds to treat time as a blank form lying ready in the mind and making the perception of the relations themselves first of all possible. Here again, too, as in the case of space, we have not an explanation, but rather—as Kant himself allowed—what is *prima facie* a mystery, "which, however, if we diligently trace it back to the beginning, may be dispelled".[2] That investigation psychology—so grievously neglected by Kant himself—has since made. The source of his mystery, we may now say, was just his own mistake.[3] His two positions—that time is a pure *a priori* form, and that only through it such temporal relations as 'before,' 'after,' 'while,' imply, become possible—are incompatible. He precisely inverted the order at 'the beginning' which he was anxious to ascertain. His pure form is just the concept of empty time which genetically does not and could not come first.

There is still a feature of Kant's theory of time which—in

[1] Page 129 above.
[2] *Cf.* previous article, p. 458, and Kant's *Prolegomena*, § 6 *fin.*
[3] *Cf.* first article, p. 274.

view of its prevalence—it may be well to consider, though it is not one that can retrieve his main position. On the contrary, as we may see, it further confirms our own. According to Kant the distinctive peculiarity of time is that it is the *form of the inner sense*. But that there is no such sense is a fact that may now be said to be beyond dispute.[1] The doctrine that there is, commonly attributed to Locke, was adopted by Tetens and other eclectic psychologists and finally accepted without question by Kant himself.[2] Locke, however, said expressly that reflexion, though a source of new ideas, is "not sense," but unfortunately he added—with reprehensible carelessness—"yet it is very like it, and might *properly enough* be called *internal sense*".[3] Thus what for Locke after all was only an analogy came to be regarded as an identity. And, as we have seen above, there is nothing in Locke's exposition of temporal perception to suggest that he regarded succession as a form of reflexion or 'inner sense'. On the contrary he expressly described succession as a simple idea, not as a form of reflexion, but as the object of it, whenever we observe the train of impressions and thoughts 'that take their turns in our understandings'. That succession cannot be at once a simple idea and yet a mode of duration he entirely overlooked, repeating the mistake he had already made in the case of space.[4] It may indeed be regarded as a single object—an object of a higher order—for it implies a relation, as its prepositional prefix plainly shows. On the whole then, regarding knowledge from the historical standpoint, we may again conclude that the continuity between the perceptual and the conceptual in the case of temporal order is also clear.

Number.

§ 8. In the so-called 'natural numbers' we have a new kind of order, which—unlike the temporal and spatial orders—is not continuous but essentially discontinuous or 'discrete'. In this domain and the logical extensions of which it is capable the most exact knowledge we possess is contained. Here, if anywhere, we seem to be confronted by the great dividing line which is supposed to separate sense-knowledge from thought-knowledge. If it can be shown that here too some perceptual knowledge is prior to any conceptual

[1] *Cf. Psychological Principles*, pp. 14-16.

[2] For a compact and critical account of the whole doctrine, *cf.* Volkmann, *Lehrbuch der Psychologie*, 2nd ed., ii. (1876), pp. 178 ff.

[3] *Cf. Essay* II., i., § 4, first italics mine.

[4] *Cf.* above p. 131.

knowledge such as that afforded by mathematics, then the continuity between sense-knowledge and thought-knowledge for which we contend will be again established. Here, as before, we must begin from the historical or genetic standpoint.[1] Probably the earliest definition of number in general is that of Euclid's *Elements*, *viz.*, any "plurality of unities (*μονάδων*) taken together". Assume 'unity' to be here merely equivalent to one, we have then two terms—one and many—both involved in the *definiendum* and therefore presupposing knowledges prior to that of number in general which they serve to define: the knowledge of these terms in other words would be the 'first for us'. To verify this point we must examine that early definition of Euclid more closely.

Even if Euclid's term (*πλῆθος*) be not restricted to a finite plurality—any more than the natural numbers themselves are said to be—yet it plainly implies a lower limit to such finite plurality. Euclid's definition in other words excludes both zero or none and unity or one from the domain of number as implying plurality. A given number (or *Anzahl*, as the Germans say) so far is regarded as a definite plurality. At this stage in fact *one* is not itself a number but 'the measure of number,' as Aristotle maintained and the Pythagoreans assumed.[2] This reference to 'measure' is not quite accurate, but for the moment we may let it pass. But what we begin by 'measuring' we may parenthetically remark, is not yet number but merely plurality. Still less is nought or *none*, a number: it is not even 'a measure' of number, and is meaningless save as a symbol for emptiness. Moreover, the numerical notation of Europe lacked this 'mere cypher' till it was introduced from India by the Arabs during the Renaissance.[3]

Now it is precisely the epistemological characteristics of number as 'first known to us' which we are seeking to ascertain. These obviously could not include the later, to say nothing of the latest, of its conceptual extensions. So far *one*—already implied in this and that, here and there, now and then—is *contrasted with many*. And it is no more to be brought into line with *none* than never with time or nowhere with place. In the wider domain of scientific conception the case is doubtless different. Euclid's definition of number as

[1] *Cf.* I., p. 258 (vol. xxviii.).

[2] *Cf.* Aristotle, *Metaphysica*, XIV., chap. i., p. 1088*a*; M. Cantor, *Geschichte der Mathematik*, 1880, i., p. 159.

[3] *Cf.* H. Hankel, *Zur Geschichte der Mathematik im Alterthum und Mittelalter*, 1874, pp. 41-46. The Arabic *çafira*, from which our cypher is derived, means we are told, to be empty.

plurality of unities is then too narrow. Numbers (*Anzahlen*) are then defined by means of certain operations, *viz.*, $n + 1$ and $n - 1$, operations which result in 0 and 1 being regarded as *themselves* numbers. They are then arranged in order before the other numbers, 2, 3 . . . with which, according to Euclid and ordinary thought, the series of numbers as definite pluralities begins. But to maintain that our first acquaintance with numbers begins with 0 and 1—as their subsequent scientific exposition may do—is a mistake such as only ignorance of psychology or contempt for it could excuse. The ignorance is displayed and the contempt avowed by G. Frege, who asserts that "0 and 1 *are numbers in the same sense* as two and three";[1] yet saying at the same time that "number answers the question: how many (*wie viel*)".[2] But to ask or answer this question we must at least know what many or plurality means. This much knowledge is essential to any understanding of the question though not in general sufficient for an immediate answer. Anyhow—unless the fact of a plurality being present is conceded—to ask how many is at this stage to be guilty of 'the fallacy of many questions' —much as if—to take the stock instance—we asked a man: when did you leave off beating your wife—a question which is only relevant when the person addressed is known to be a husband who was in the habit of beating his wife. The first question in the present instance should be: are there any? Then the possible complete answers would be, No, none, or Yes, one, or Yes, many, *i.e.*, more than one. But to maintain that all three answers imply number *in the same sense* always and for everybody, seems a trifle hasty.

Frege, however, goes on to allow "that the numbers 0 and 1 have something peculiar (*etwas Besonderes*) about them, but so" he adds, "has every whole number; except that it strikes us ever less and less (*fällt weniger in die Augen*) as we advance (*bei den grösseren* [*Zahlen*])". Now we shall find that here, in spite of himself, this 'logistician' has recognised facts of the first importance for us in tracing the genesis of our knowledge of number. But his language is vague. What is it exactly we ask, that *saute aux yeux*, when on the one hand we compare collections (and eventually numbers) consisting of few components, and on the other, collections (and eventually numbers consisting of many)? We may notice that a given perceptual difference (*Unterschied*) in the former involves a greater, but in the latter a less,

[1] *Cf.* on this point, Husserl, *Philosophie der Arithmetik*, 1891, ch. viii., "*Eins und Null als Zahlen*," pp. 142-148.

[2] *Die Grundlagen der Arithmetik*, 1884, p. 57, italics mine.

disparity (*Verschiedenheit*). Now in the case of 0 and 1, where the difference is one, the disparity is infinite. But in the case of a plurality that turns out eventually to be a hundred, say, and another that turns out eventually to be a hundred and one, neither the disparity nor the difference is perceptible at all. Apart of course, that is to say, from a special arrangement of the components, *e.g.*, of the hundred as a square of tens, when either the addition or the removal of one might be perceptible though the disparity would not be striking. But no disparity of the sort described enters at all into the scheme of natural numbers—however far we advance—so long as we consider only those which are finite. All numbers alike are here built up in the same way by continuous additions of 1; and there is nothing peculiar to the earlier steps distinguishing them from the later.

Between any two finite numbers, no matter what, there is then always a definite difference: two quantities or two aggregates may be equal but not two numbers. Our rude forefathers, who in this connexion were primarily interested in groups of objects of the same kind—if the corresponding difference were perceptible to them—might have said merely that one group was greater and the other less. So far the groups would be compared as wholes, no clear distinction being made between quantity and number; although the one implies continuity and the other discreteness. So far, in other words, the two groups would be perceived as differing only as, say, two piebald objects of different size. Such a difference, however, as in the case of two uniformly coloured objects is only perceptible provided it exceeds a certain amount, which is not independent of, but relative to, the wholes compared.[1] Of number as distinct from quantity, we repeat, there is here no clear perception: or, otherwise stated, the distinction of 'more or less' from 'many or few' has not yet fully emerged. And yet the two ideas are fundamentally different; and it is unfortunate that the description of number as 'discrete quantity' should have led so many to have associated them together.[2] 'Continuous quantity' can in general be measured, and measurement is indispensable in most forms of handicaft. Doubtless it is this fact which has led to the close association of quantity and

[1] Here in fact we come upon what in psychology is called Weber's Law, and this presumably is what Frege had in mind in the passage cited above.

[2] Cournot long ago called attention to this usage as unsound philosophically as well as linguistically; and he suggested the use of *quotity*, at any rate technically, to express the strict meaning of number (*Essai sur les fondements de nos connaissances*, 1851, i., p. 395).

number, despite their essential difference; for measurement commonly involves counting. But again the unit or standard that is repeated in measurement is quite distinct from the items or ones that are enumerated in counting. Both indeed are ones; but the former is more or less arbitrary and varies with circumstances. Whereas, for example, we have no choice about the numbers we assign to the legs of a biped or a quadruped, an octapod or a decapod, animal, and in innumerable other cases; yet we may call, say, a given length one or twelve, according as we take a foot or an inch as our unit.[1] This difference again is vital: we can measure a quantity, we cannot strictly measure a number, Aristotle notwithstanding. "The separation between number and quantity is thus complete: each is wholly independent of the other."[2] This, however, is only the logical side of the matter.

But there is another side, and here it is not logical 'implication,' the cardinal point with Frege and Russell, but what may be called psychical epigenesis,[3] its historical presupposition, that is entitled to consideration. Here we have found that, despite the logical independence of number and quantity, all knowledge of the discrete is through a differentiation of what is continuous. We have seen this to be so in the case of space and time: local signs and temporal signs presuppose first of all extensity and protensity respectively; and they presuppose further subjective activity as an essential factor in their differentiation. As already incidentally remarked, in here and there, now and then, we have the first emergence of the discrete; for what is here is so far one and distinct from what is there, which is also one; and so with what is now and what was then. And this oneness or unity is not a sense-datum: it is due to the unifying act

[1] Perceptually, it is perhaps worth noting, the choice of units is not altogether arbitrary for us; though conceptually it has become entirely a matter of convention. For sense-knowledge then, to say that a particular object is large or small has a definite meaning; for here we are confronted with absolute *minima*. For thought-knowledge, on the other such expressions are at bottom meaningless. If the scale of all the dimensions in the universe were altered, Laplace once said, there would be no knowledge of the change. In point of fact there would be no change. As to this, however, there has been some controversy. This, of course, is not a question to discuss here, but there seems to be no doubt that the old relativity doctrine, at any rate, as one must say now, has maintained itself. The curious reader may be referred to a discussion between Lachalas and Delboeuf (*cf. Revue Philosophique*, xxxvii. (1894), pp. 73 ff.). But no similar supposition or controversy is possible in the case of number.

[2] Russell, *Principles of Mathematics*, 1903, p. 158.

[3] Imperfectly recognised by Kant, *cf. Critique*, "Transcendental Deduction," § 27, B., p. 167.

which selects it for attention.[1] What is thus the object of attention may be in itself simple or complex, single or multiple: it is, for the nonce and so far, discerned as a whole.

But, though thus made discrete, this object is still concrete or particular. In other words, it is discriminated as this or that—for it is immaterial which demonstrative is used—*within* the persisting *continuum objectivum* to which our primitive impersonal propositions refer. The said this or that is not '*thought of*' as one in the abstract, is not classed, so to say, in the genus 'one,' regardless of its concrete particularity. It is *perceived* as this or that, and perceived solely in virtue of the fact that its differentiation from the entire environmental situation is a fact which attracts the subject's interest here and now. But a distinction must here be noted, *en passant*, which is often overlooked. When we talk of this *or* that, only a single differentiation within the objective continuum is necessarily involved. The continuum itself is never either this or that. When, however, we refer to both this *and* that, two differentiations of the continuum are necessarily concerned.[2] Doubtless number also is implied. But it does not seem to be necessarily more than implied,[3] as it is, in all pluralities. The new fact is the separation that the two particulars involve. This fact, though fundamentally important for knowledge in this special case of dichotomy[4]—since here alone is further division excluded—is another common characteristic of all pluralities.

There is yet a third characteristic of perceived pluralities. Whatever is perceptually apprehended as a whole must be in some way circumscribed either in space or in time. It would not occur to the untutored savage to regard a snowstorm as a plurality (though it was but one event in time), but in calling bees circling round a hive 'a swarm' he would be regarding them as one. It is this 'piebald' pattern, due to the separation of its components, that distinguishes a single group from

[1] *Cf. Psychological Principles*, p. 72, and on Locke's mistake in overlooking this fact, compare pp. 320 ff.

[2] The so-called "differential theory of presentations" rests entirely on this confusion. *Cf. Psychological Principles*, pp. 84-86, 322.

[3] This is perhaps a subtle point and yet it is a real one. When for example we compare this and that, what is explicit is just their likeness or difference in a certain respect: when we colligate them as a plurality, we regard them as one whole; and then they are simply items, and comparison is not involved.

[4] *Cf.* Jevons' *Principles of Science*, 1872, on bifurcate classification, pp. 694 ff.

a single continuous object, as remarked above. Such patterns we find to vary considerably if we compare groups of one kind of object with those of another kind. Yet each retains more or less constantly its own characteristic features.[1] Any plurality, then, that can be perceived is intuited as in some sense ordered, *i.e.*, as definitely arranged either in space or time. But what we call disorder or irregularity, though still a definite arrangement,[2] is not a helpful one. And now at length, after these preliminaries—needless perhaps as they may appear to some—we may proceed to inquire how we first become acquainted with number.

It is obvious that the character of the pattern—its 'figural moment'[3] as it has been called, may facilitate or it may entirely frustrate our endeavour. But quite apart from this, there is a subjective limitation to our perceptual power, *viz.*, our restricted 'span of prehension' or the 'narrowness of our consciousness'.[4] How far within this narrow limit we can proceed does, however, depend entirely on the pattern presented, which we colligate or 'take in,' but do not ourselves construct. And how do we begin: is it by counting? A little reflexion will show that counting presupposes number, and that apart from some idea of this as the end we seek to attain, is nothing but iteration.[5] And besides the pattern might be such that we could not be sure that we had not taken some items twice over and overlooked others altogether.

But there is at least one pattern where this risk disappears: that which we call a couple or a pair. In this case, however, we never count. It is often said that there are savage races who cannot count beyond two.[6] This statement is most inaccurate: there are no savage races that count two, though there are some who have a binary system of numeration, count that is to say by 'power' of two; but they do not carry the process very far, for the simple reason that they seldom have any interest in so doing. A pair or couple is the simplest possible pattern;[7] for there can be no irregularity

[1] Every language bears witness to this fact by such words, *e.g.*, as avenue (of trees), cluster (of stars), phalanx (of soldiers), covey (of partridges), skein (of wild geese), herd (of deer), pack (of wolves), etc., etc.

[2] *Cf.* Bergson, *L'Évolution créatrice*, 1907, p. 242.

[3] Husserl, *op. cit.*, pp. 227 ff.

[4] *Cf. Psychological Principles*, pp. 73, 223.

[5] *Cf. op. cit.*, p. 324.

[6] *Cf.* Conant, *The Number Concept*, 1896, p. 2. In this interesting book, overloaded though it is with the numerical vocabularies of primitive peoples, there is no instance in which the name for two is 'one and one'.

[7] In itself, of course, the binary scale is just as endless as scales which are more complex and so more comprehensive, in that they employ more symbols. Its very simplicity in this respect led Leibniz to regard it as

about it: as soon as we regard it as a plurality we perceive it as two. But we can also perceive the number in larger pluralities, provided they are regular and terminated: without losing sight of the whole, we can distinguish each of its components. The limit seems to be a regular pattern of six or seven, like the following ::: :::. for example. Any permanent embodiment of such a regular pattern within these limits might be taken as a basis or standard with which larger or less regular patterns might be compared or 'tallied'.[1] Counting or enumerating (Ger. *Zählung*) as distinct from mere iteration begins, then, in tallying what we may call the *numerand* with some standard which is independently intuited.

But merely to ascertain a one to one correspondence between the items of two collections will not enable us to tell of how many items each consists. Moreover, to call the two collections *numerically* equal (*gleichzählig*) is unmeaning unless—as already said—we know what is meant by number itself. Equivalent we may call them, if in so doing we refer only what is implied in their one to one correspondence. Any two such collections have been called 'similar classes' and also with less logical impropriety referred to as belonging to the *same* class. This is a class whose content will turn out to be the number implied in the extent of the similar classes, but whose own extent is for us altogether indefinite. Suppose we had several instances of a given 'class' of this kind—call it n—so arranged (as parallel rows of equidistant points, for example) that, though its content exceeded our 'span of prehension,' still their *similarity* was evident on inspection. We should so far be without any means of recognising again the logical *identity* of any one of them apart from its relation to the rest. Suppose now that we increased the second of our rows by an item: we should then have two classes, n and $n + 1$, which however we will call p. Passing next to

ideally the most perfect presentation of the structure of a numerical system.

[1] And in fact, two, four, five and two fives, have been so taken (*cf.* Conant, *op. cit.*, ch. v., on 'Miscellaneous Number Bases'). The last has survived in our present decimal system owing to the natural fitness of the five digits on each hand as a complete pattern. The superiority of the duodecimal system to what is called (by P. Du-Bois Reymond, *Allgemeine Functionentheorie*, 1882, p. 19) 'the hateful decimal system' has been realised too late, it is feared, to secure its general adoption, notwithstanding Herbert Spencer's heroic efforts. Most assuredly if our mathematics were but symbolic logic and had no empirical basis whatever, we should never have had either that, or the 'hateful decimal system,' or indeed any other 'natural,' system whatever. How can the logistician who discards psychology account for this naturalness?

the third row, let us make it equal to p by adding one item; and then by adding another, convert it into a new class $(p + 1)$, calling this q. It is obvious that this procedure—which might be continued indefinitely—though it will correspond to some part or other of the series which we now call the natural numbers, will never tell us *what* part, so long as we only know that our first term n is a collection that is similar to such other collections as are similar to it. Suppose, however, that we had proceeded in the opposite fashion, and removed one item from the second row, thereby obtaining a new class $(n - 1)$; and calling this m, repeated the same procedure, thus obtaining successively classes l, k, j, etc., also a part of the series of natural numbers. Indefinite repetition of the process is here obviously impossible: sooner or later—since we started from a finite collection—we should at length reach a row consisting of two items, the smallest possible collection, followed by a single item, the constituent of all collections. Resuming at this point the procedure by increments, the way would now be open to us for ascertaining the content of the 'class' n, or in other words the extent, *i.e.*, the absolute number, of the 'similar classes' it is supposed to include.

The number in question, the so-called class n, we have assumed to be of a higher order than such numbers as we can directly intuite by their pattern. To enumerate it then we should have to count. But counting is now possible, since we are starting where numbers can be distinctly perceived without counting. The counting we have here in mind, however, we need hardly repeat, is not that of the so-called 'ordinal *numbers*,' or that order which we call 'natural,' where each ordered term merely *follows* its immediate predecessor: it is the recognition of a cardinal number which *contains* some other increased by one or more, or is contained by some other exceeding it by one or more. The results either way are immediately evident up to a certain point; *viz.*, so long as the constituent patterns and the whole composite pattern can be distinctly intuited together. Instances in plenty are forthcoming among the variety of numerical nomenclatures which have now been collected of all these ways of determining a cardinal number.[1]

[1] The central fact in all these is the number *radix*. It will be sufficient for our purpose to note the chief of these—the binary based on 'the couple' (from the root *copulo*) or simplest combination of items; then the quinary determined by five fingers or 'a hand,' and the decimal or double of this, 'both hands'. Here quinary and decimal scales often exist side by side, but the former tends to take a secondary and subordinate place. On the binary scale we find instances not only of 2 and 1 but of

Within the limits of immediate intuition then the two correlatives 'more and less' are equally perceptible; and either addition or subtraction may determine the designation of a directly intuited number: sometimes the one course, sometimes the other is preferred—whichever is the simpler. All which seems to show that our first acquaintance is with cardinal and not with ordinal numbers. It seems further to show that the method of mathematical induction—which defines n, the higher of two successive numbers m and n, as $m + 1$—is not the method of this stage of mental development; for we find numbers designated as $m + 2$, $m + 3$, and also as $n - 1$, -2, or even -3.[1] Is it not then clear that numbers and arithmetical operations, which we can only indirectly intuite by means of a system of symbols, historically presuppose numbers and operations that we intuite directly without any such aid? And further is it not clear that, though the mind of the savage may never advance beyond such sense-knowledge, even the scientific mind started from it?

But the phrase sense-knowledge is so apt to mislead that it seems desirable once more to point out that here as elsewhere sense-knowledge is not to be identified with sense-data. Sense-data are but the ground or *fundamentum* on which the fabric of sense-knowledge is raised. Here a physical aggregate is not the same as a collection, and a collection is not the same as a number. The aggregate is not for me a collection till I take it as a whole, nor a collection a number till I discern not merely collectively but severally the items which compose it.

2 and 2 or two pairs, as well as of 2 and 3; on the quinary scale we find 5 (or one hand) and 1, 5 and 2, 5 and 3, 5 and 4; on the decimal system similarly; save that here the higher number sometimes comes first, *i.e.*, in the 'natural' order as in French *dix-sept*, *dix-huit*, sometimes second, as in the Greek ἕνδεκα, δώδεκα, Latin *undecim*, *duodecim*, English thirteen, fourteen. It is more interesting still to find that sometimes a number is expressed by subtraction, as in the Latin *duodeviginti*, *undeviginti*, 2 from 20, 1 from 20; but in more barbarous languages, 8 as 2 from 10, or simply as 'less two' the ten being merely implied; 9 as 1 from 10 or just 'less one'; even 7 as 'less three,' and 6 as 'less four' occur. We have an instance of the same sort in the Latin numeral signs iv., ix., xl., xc., etc.—the only one as regards 5 so far as I know. This denoting by subtraction seems readily explained if we assume familiarity with the higher number or *radix* as 'the halting point of the scale'. So 9 becomes 'almost 10' or 'incomplete 10,' as it is called in some languages (*cf.* Conant, *op. cit.*, ch. iii., "On the Origin of Number Words").

[1] See note above.

(To be continued.)

II.—THE MEANING OF MATTER AND THE LAWS OF NATURE ACCORDING TO THE THEORY OF RELATIVITY.

By A. S. Eddington, F.R.S.

The theory of relativity has introduced into physics new conceptions of time and space, which have aroused widespread interest. Less attention has been paid to the position of matter in the new theory; but a natural interpretation suggests a view of the nature of matter, which is in some respects novel and is more precise than the theories hitherto current. It is perhaps a commonplace that, whatever may be the true nature of matter, it is the *mind* which from the crude substratum constructs the familiar picture of a substantial world around us. On the present theory we seem able to discern something of the motives of the mind in selecting and endowing with substantiality one particular quality of the external world, and to see that practically no other choice was possible for a rational mind. It will appear in the discussion that many of the best-known laws of physics are not inherent in the external world, but were automatically imposed by mind when it made the selection.

Probably the views here reached accord in a general way with some recognised philosophical theory; but it will be of interest to show how they are approached from the physical side. I must crave indulgence for the very imperfect expression of my ideas, being on the one hand debarred from using the conventions and terminology of mathematics, and on the other hand insufficiently expert to use the technical terms of philosophy.

It is convenient first to make some remarks on the general nature of physical theories. We believe that the ordinary objects of experience are very complex; in order to understand their mutual relations and to "explain" the phenomena, they must be resolved into simpler elements. Whilst it is a reasonable procedure to explain the complex in terms of the simple, this necessarily involves the paradox of explaining the familiar in terms of the unfamiliar. Thus the ultimate

concepts of physics are of a nature which must be left undefined; we may describe how they behave, but we cannot state what they *are* in any terms with which the mind is acquainted. The entities which appear in physical theories fall into three categories. We take for illustration the electromagnetic theory of light. There is first the æther. The word brings before the mind the idea of a limitless ocean pervading space; but during the last century, all the properties which would make the æther akin to any known fluid have had to be abandoned one by one. At the present time it would seem that the only property it possesses in common with a material ocean is that of being three-dimensional—and even this is now challenged by the relativity theory. To describe the nature (as distinct from the *properties*) of such a medium in terms familiar to the mind is impossible. Further, the æther is not in itself a subject for physical measurement. Secondly, there are quantities like electric and magnetic force; their nature is undefinable but their intensity can be measured by practical experiment. It is fundamental in the theory of relativity that anything measurable must necessarily be of the nature of a *relation* between two or more constituents of the external world; accordingly, we call objects of this second class relations. Thirdly, we have light, an object of experience; it is something common to our mental picture of the universe and to the analytical world of physics. The three classes are accordingly: (1) elementary analytical concepts, undefinable and unmeasurable; (2) relations, undefinable but measurable; (3) objects of experience, which are definable.

There is no particular awkwardness in developing a mathematical theory in which the elementary constituents are undefined. But it is desirable that at some stage in the discussion we should get to know what it is we are talking about; and this is achieved when we can identify one of the complex combinations of our undefinables with some object of experience recognised by the mind. Strange as it may seem, it is quite easy to overlook this necessity.

An objection may be raised here. Do not the things which can be measured—time, mass, electric force, etc.—come within experience? And may we not be satisfied when we reach the stage of dealing with things which can be measured? The physicist is satisfied, and rightly so; but then he is not usually occupied with evolving a complete scheme of things. Now all measures are made with the help of undoubted objects of experience—clocks, scales, galvanometers, etc.—and if we are to make a complete theory,

to understand how the galvanometer measures an electric current, we must first learn what a galvanometer is in terms of electric currents and the other simpler concepts of the theory. In other words the theory must be developed until it reaches some combination which can be identified as a galvanometer.

There are, in fact, a number of possible sites for a bridge between the analytical theory and the phenomena of perception. As has been said, the physicist commonly makes the connexion through things that are measured experimentally. Another alternative is to carry on the analytical development of the external world to the point at which it meets mind in the nerve-centres of the brain. In this paper I have taken the middle course of making the connexion through the everyday world which we see and feel around us. I regard the objects of this world as immediately recognisable to the mind—they are our definables—so that it is here that the bridge is most naturally made. We can to a certain extent *think forward* to electric currents, or *think backward* to mental processes; but it is more in accordance with the mathematical ideal to cross the bridge at this point, and carry on any further investigations in the analytical world rather than in the perceptual world.

In the relativity theory of nature the elementary analytical concept is the "point-event". In ordinary language a point-event is an instant of time at a particular point in space; but this is only one aspect of the point-event, and must not be taken as a definition, because the space and time of experience are derived concepts of considerable complexity. From what has already been said, it will be understood that the point-event is necessarily undefinable and its nature is outside the range of human understanding. The aggregate of all the point-events is called the "World"[1]; and we postulate that this aggregate is four-dimensional. Pure mathematicians have, I believe, evolved a logical definition of the property implied by the term four-dimensional without appealing to intuitive notions of space and time; and it results that a particular point-event can be specified by the values of four variables or co-ordinates, which in practice are usually taken as three co-ordinates of space and one of time. Between any two neighbouring point-events there is a certain relation known as the "interval" between them. The relation is a quantitative one and can be assigned a numerical value. The term "interval" must not be taken

[1] The capital letter will show when the word is used in this technical sense.

as any guide to the real nature of the relation, which is beyond our power to conceive. The name refers not to its nature but to certain of its properties (ascertained later), which are those of a geometrical interval in a very extended mathematical sense—extended, because, for example, when the interval vanishes the two point-events are not necessarily identical.[1] The interval is not quite so transcendental as the point-event, because we are able to measure an interval practically with scales and clocks; but this is an anticipation of results which are only reached at a much later stage. Accordingly at present we are still pursuing a purely analytical development which has not as yet been connected with anything in nature which can be perceived or measured.

What we have here called the World might perhaps have been legitimately called the æther; at least it is the universal substratum of things which the relativity theory has given us in place of the æther. But the æther in physical theories has been gradually changing its character as science has developed, and perhaps this latest change from a three-dimensional to a four-dimensional aggregate is sufficiently fundamental to justify a new name.

Consider a small portion of the World. It consists of a large (possibly infinite) number of point-events, between every two of which an interval exists. If we are given the intervals between a point-event A and a sufficient number of other point-events, and also between B and the same point-events, can we calculate what will be the interval between A and B? In ordinary geometry there are rules for doing this; but in the present case, knowing nothing of the nature of the relation signified by the word interval, clearly we cannot predict any law *a priori*. There may be in any small region some law for calculating the interval AB, which need not be the same in all parts of the World. Whether this is so or not, and even if the individual intervals are entirely arbitrary and discontinuous, we may take the rule which best represents the average for the region; and the coarse measures of physics appreciate only the average. This rule, or average rule, of connexion of intervals expresses a quality of the World at the region considered, and may reasonably vary from region to region. One part of the World differs from another part —an intrinsic absolute difference,—and this on our theory is the starting point for the infinite variety of nature.

[1] Point-events may be compared to straight lines in three-dimensional space, and the interval to the shortest distance between them. When the shortest distance vanishes the two lines intersect but are not necessarily coincident.

An example may help to make this clear. I deliberately choose a non-geometrical example, because we must try to get rid of the obsession that the interval-relation is something geometrical. Compare the point-events to persons, and the intervals to the degree of acquaintance between them. Given the degree of acquaintance between A and C and between B and C, there is no rule for determining the degree of acquaintance between A and B. But a statistician might determine in any community the average rule, or "correlation," between the mutual acquaintance of two individuals, and their acquaintance with a third individual; if A and B know C, it increases the probability of their knowing one another. The correlation may be higher in some communities than in others, and so measure intrinsic differences between communities.

The mathematician measures this quality of the World by a set of coefficients, denoted individually by g_{11}, g_{12}, etc., up to g_{44}, and collectively by $g_{\mu\nu}$. But $g_{\mu\nu}$, besides containing the measure of this absolute quality, contains something else,—physical time and space, which we now believe are not intrinsic qualities of the world. Probably the philosopher and the physicist attach somewhat different meanings to time and space; to the former it is the seat of events, to the latter it is in addition the seat of measurement. Philosophical space-time has been implicitly introduced in postulating the World to be four-dimensional; but it is a long step from this to the partitioned space and time of the physicist which serves as a reticule for his measurements. In order then to give definite values to $g_{\mu\nu}$, we have first to choose a system of co-ordinates, *i.e.*, to define a particular way of partitioning space and time; and at the present stage we are not in a position to do this. The way out of the dilemma is to continue the analysis, leaving the space and time undetermined, but making sure that our results will apply whatever system of measuring space and time we ultimately decide to adopt. Fortunately a remarkable calculus has been invented by pure mathematicians for an entirely different purpose, which enables us to pursue the analytical development leaving the co-ordinates entirely undefined.

By considering the variation of $g_{\mu\nu}$ from point to point—its gradient—and the gradient of the gradient, other more complex characters of a region are obtained. But these involve the undetermined space and time, and our object is rather to refine out from space and time those things which are the intrinsic qualities of World. By an exceedingly complicated combination of these operations, we arrive at a

set of quantities called $G_{\mu\nu}$, which serve our purpose.[1] It must be remarked that a complicated mathematical formula may express a comparatively simple idea; for example, the formula for the curvature of a surface is by no means simple, yet everyone can form an idea of the property which it expresses. It is true that the physical conception measured by $G_{\mu\nu}$ is scarcely intelligible to us, but a being capable of conceiving five dimensions would grasp it more easily.

The quantity $G_{\mu\nu}$ plays a fundamental part in Einstein's generalised relativity theory, which asserts as a law of nature that in empty space

$$G_{\mu\nu} - \tfrac{1}{2}g_{\mu\nu}G = 0.^2$$

This is in fact the new law of gravitation, which in all ordinary cases agrees approximately with the Newtonian law of the inverse square, but in addition accounts for the celebrated astronomical discordance of the motion of the perihelion of Mercury. Unlike the Newtonian law, however, it does not presuppose any particular mode of measuring space and time, and it is for that reason especially that it commends itself to those who have a bias in favour of the relativity theory. It expresses a relation between the intrinsic properties of adjacent portions of the World, and not (like the Newtonian law) a relation between these properties and some extraneous space and time.

When matter is present the law is modified by the addition of a term $T_{\mu\nu}$ which is compounded from the density, momentum, stress, and energy of the matter present. The new term is a tensor, and accordingly the equation is still independent of space and time. The equation now reads

$$G_{\mu\nu} - \tfrac{1}{2}g_{\mu\nu}G = -8\pi T_{\mu\nu}.$$

I suppose that the usual view of these equations is that the first of them expresses some law inherent in the continuum —that the point-events are forced by some natural necessity to arrange themselves so that their relations accord with this law. And when matter intrudes, it disturbs the linkages and causes a rearrangement to the extent indicated by the second equation.

[1] Things like $g_{\mu\nu}$ and $G_{\mu\nu}$ (called tensors) occupy a position intermediate between intrinsic qualities of the World, and qualities which involve space and time haphazardly. The *vanishing* of a tensor does actually denote an intrinsic condition quite independent of time and space, and the equality of two tensors in the same region is also an absolute relation. It is for this reason that $G_{\mu\nu}$ (the simplest tensor after $g_{\mu\nu}$) attracts our attention.

[2] G is an abbreviation for a complicated combination of $g_{\mu\nu}$ and $G_{\mu\nu}$. The whole of the left side is a tensor, and therefore, although it does not measure an intrinsic quality of the World, its *vanishing* (expressed by the equation) denotes an intrinsic condition. (See previous footnote.)

But I think there is something incongruous in introducing an object of experience (matter) as a foreign body disturbing the domestic arrangements of the analytical concepts from which we have been building a theory of nature. It leads to a kind of dualism. What should we think of a chemical theory which, instead of analysing matter into atoms, postulated the existence of non-material atoms in addition to continuous matter and then proceeded to discover laws of nature connecting the behaviour of matter with that of the non-material atoms? There is a redundancy, and whenever we have an unnecessary multiplication of entities we are liable to find spurious laws of nature which are in reality only identifications. The result that the velocity of light is the same as that of electric waves does not determine any law of the æther, but merely the identification of light with electric waves.

We prefer therefore to take another view of the equations of Einstein. The vanishing of the left-hand side in any region denotes a definite and absolute condition of the World in that region; and, if Einstein's theory is true, that condition is common to all parts of the world which are empty of matter. Up to the present we have had no indication of what impression, if any, that condition of the World would make on our senses. *I suggest that it gives us the perception of emptiness.* The left-side of the equation is composed solely of analytical quantities which have not been defined; at some time or other, and preferably at the earliest possible stage in our synthesis, we have to identify the symbols of theory with things familiar to experience—in short, to learn what we are talking about. This is our opportunity. Mind surveying the external world passes over unnoticed many of the differences of quality which from the mathematical standpoint are most elementary; it has developed no faculty for perceiving the quality measured by $g_{\mu\nu}$; but we have now arrived in our discussion at a quality which mind takes cognisance of and recognises under the name of "emptiness". Einstein's law of gravitation is not a law of nature but a definition—the definition of a vacuum.

Similarly when $G_{\mu\nu} - \frac{1}{2}g_{\mu\nu}G$ does not vanish, the corresponding property of the world is perceived by us as a distribution of matter. Our second equation teaches us what density and state of motion of matter is the perceptual equivalent of any particular value of this world-property. This again is not a law inherent in the external world, but merely describes how the hitherto undefinable quality measured by the left-hand side of the equation is appreciated

by the human mind. Matter does not cause an unevenness in the gravitational field; the unevenness of the field *is* matter.

It may be worth while to turn aside for a moment to point out why the meaning of these equations has been obscured in the usual presentation of the relativity theory. The general course is to start with the "interval" as something immediately measurable with scales and clocks; accordingly $G_{\mu\nu}$ is measurable practically, and the equations are of the type normally encountered in physics in which all the quantities involved are measurable. But in a strict analytical development the introduction of scales and clocks before the introduction of matter is—to say the least of it—an inconvenient proceeding. Thus in our development $G_{\mu\nu}$ is not merely of unknown nature but unmeasurable. The equations therefore connect the familiar and measurable quantities on the right with the hitherto unfamiliar and unmeasurable quantities on the left, and have no value except as definitions.

Our contention, that the introduction of matter as a foreign entity in the gravitational field is superfluous, is so fundamental in what follows that at the risk of repetition we must endeavour to make plain the position taken up. How any physical phenomenon can produce a sensation in the mind must be a great mystery; and it would be difficult to say that any theory of the nature of matter makes our perception of it less or more easily understood. But those who are accustomed to regard the $g_{\mu\nu}$ as coefficients defining the geometry of space may well deem it altogether too fantastic that any combination of these quantities could create a sensation in the mind. But we have seen that the $g_{\mu\nu}$ are undefinables, and so we may attribute to them whatever nature we may conceive as best fitted to affect the mind; their geometrical interpretation is incidental, and is due to the fact that natural geometry depends on observations of the behaviour of matter and therefore ultimately on the behaviour of the $g_{\mu\nu}$. Granting then that a brain constituted of $G_{\mu\nu} - \frac{1}{2}g_{\mu\nu}G$ is at least as capable of being the seat of sensation as any other conceivable structure, there is no occasion to introduce any other kind of substance. We do not suppose that a ray of light is a rod which causes the electro-magnetic force to oscillate along its path; the electro-magnetic oscillations constitute the ray of light. We do not suppose that heat is a fluid which causes violent motions of the molecules of a body; the motions constitute heat. So too, we need not suppose that matter is a substance which causes irregularities in the gravitational field; the irregularities are matter. We shall

show presently that matter thus defined satisfies the well-known laws of mechanics.

According to this view matter can scarcely be said to exist apart from mind. Matter is but one of a thousand relations between the constituents of the World, and it will be our task to show why one particular relation has a special value for the mind. It need not surprise us that mind appreciates a particular relation rather than the external entities themselves; it is but an instance of the peculiarity that mind sees not the *paint* but the *picture*.

We have thus arrived at a definition of matter in terms of the analytical concepts and their relations. And it must be remarked that matter and the motion of matter have been defined separately. When we have fixed on any arbitrary way of measuring space and time, the different components of the tensor $T_{\mu\nu}$ give separately the density, momentum, and other combinations of the mass and velocity of matter. In practice we detect the motion of a body by noticing that the body has disappeared from one point of space and an apparently identical body has appeared at a neighbouring point. But as here brought in motion has nothing to do with this property. The analytical introduction of motion is rather curious. It is the ratio of two of the components of the World-property $G_{\mu\nu} - \frac{1}{2}g_{\mu\nu}G$. We have thus a definition of motion which does not involve the elusive idea of permanent identity of particular particles of matter; nor does it involve the definition of a particular way of measuring space and time, but rather we are able to proceed from it to introduce the partitioned space and time of physics.

Now the expression $G_{\mu\nu} - \frac{1}{2}g_{\mu\nu}G$ has a remarkable property known as the property of *conservation*. This property is simply a mathematical identity due to the way in which the expression has been built up from the simpler elements $g_{\mu\nu}$. It results from this property that, *provided we measure space and time in one of a certain limited number of ways*, matter will be permanent; for every particle which disappears at any point of space a corresponding mass will appear at a neighbouring point (conservation of mass). Further, the velocity of matter as introduced in the previous paragraph will agree with the velocity measured in the ordinary way; and this provides the basis of practical methods of defining the space and time here required. Finally, momentum and energy will obey the law of conservation.

These extensive results are in no sense laws of nature; they must hold in any imaginary world just as they do in the actual world. Or if $g_{\mu\nu}$ referred to relations in a human

community instead of to intervals of point-events, the same laws must still hold. To predict these laws we need to know nothing about the properties of the constituents of the external world; all that we need to know is, under what names will mind recognise the things which obey the laws?

For some unknown reason the mind appears to have a predilection for living in a more or less permanent universe. The idea of reality is at least closely associated with the idea of permanence. And so the mind has picked out from the external World a universe built from permanent elements (matter), and it is pleased to regard this as the real world. This, we have seen, involves a specialised way of measuring space and time; and so compelling is the desire for permanence that we have adopted this special space and time instinctively and find it hard to realise it is not the only one. I think this is the origin of the singling out of our familiar space and time from the many possible ways of resolving a four-dimensional continuum.

May we not go further? Why is it that of all the properties distinguishing different parts of the World, only one, and that a rather complex one, is perceived by us as substantial? Imagine an embryo mind surveying the external World without form and void—void because as yet mind has not made the final decision "Let *this* be matter". It is at the parting of the ways, uncertain with what feature of this cosmos to develop faculties of recognition. But already it feels the inborn necessity of finding a home for itself which shall be a rational world—a world of permanence and not a kaleidoscopic Wonderland. Point-events, their intervals, the property of $g_{\mu\nu}$ it can make nothing of; these have not the properties it needs. It seeks further, and comes to the quality which we have identified with matter. Here at last is suitable material. Only by developing senses and an imagination which makes this the most real external object can mind find for itself a suitable habitation.[1] The choice is made, and from a fleeting disorder of points and intervals the heavens and the solid earth stand clear.

It must be recognised that the conservation of mass is not exactly equivalent to the permanence of matter. Mind, whilst insisting on a general element of permanence in the things around it would have been satisfied with something much less perfect than the actual conservation of mass. The

[1] There are other still more complex qualities which would be suitable. If by any chance the mind has preferred one of these, the only difference is a law of gravitation more complicated than that of Einstein, but probably indistinguishable from it experimentally.

trees put forth leaves, the pond dries up and disappears; for the primitive mind these are definite exceptions, and the fact that delicate measurement traces a conservation of mass even in these cases is scarcely relevant. From another aspect the permanence of matter involves something more than the permanence of mass. When Alice's croquet-mallet turned into a flamingo, it is not necessary to suppose that the conservation of mass was outraged; but a rational mind requires that such incidents should be at any rate uncommon. The continued existence of solid bodies involves laws of nature which are as yet imperfectly understood, and we must leave this difficulty unanswered. Whilst we have not shown that $G_{\mu\nu} - \frac{1}{2}g_{\mu\nu}G$ possesses all the qualities desirable for the substance of a perceptual universe, we have shown that it possesses one of the most essential qualities, entirely lacking in any simpler combination; and it is reasonable to think that this had a great deal to do with its selection.

This view of the conditions determining the selection of matter, is strengthened by the consideration that matter does not play such a fundamental part in the analytical world as it does in the perceptual world. The recent tendency of physics has been to regard the quantity known as Action (energy integrated through time) as the most real thing in nature—to put the conclusion crudely. If the perceptual universe were constructed solely in accordance with physical considerations we should expect its substance to be Action. This lack of correspondence has often seemed perplexing, but we can now see that there is good reason for it.

The intervention of mind in the laws of nature is, I believe, more far-reaching than is usually supposed by physicists. I am almost inclined to attribute the whole responsibility for the laws of mechanics and gravitation to the mind, and deny the external world any share in them. It will probably be objected that this is going too far; no doubt the laws depend on the choice made by mind of the material for its universe, but surely Nature deserves some credit for furnishing material with such convenient properties? I doubt it. So far as I can see, all that Nature was required to furnish is a four-dimensional aggregate of point-events; and since these and their relations are undefined, and may be of any character whatever, it should in any case be possible to pick out a set of entities which would serve as point-events, however badly Nature had managed things in the external world. For the use made of the point-events mind alone is responsible.

We have seen that our identification of matter carries with it the laws of conservation of mass, energy, and momentum,

and the law of gravitation—in fact, all the laws of mechanics; and further the permanence of matter requires the time and space of experience with all the laws of geometry which belong to the latter. One important group of phenomena remains outside our scheme, *viz.*, the phenomena of electricity, magnetism, and light. A remarkable extension of Einstein's theory has been published recently by Weyl. In this the electromagnetic phenomena find a natural place in the analytical theory. The point of departure from the simpler theory hitherto followed is in the character of the relation called the interval; we have supposed that it is quantitative, so that two distant intervals AB and CD can be immediately compared. Weyl's theory does not admit this comparison at a distance; practically he considers only triangular relations between three neighbouring point-events. It is, of course, impossible to develop the consequences of this without mathematics; but it leads to qualities of the World which can be identified with electromagnetic force, electric charge[1] and current and these automatically satisfy the accepted laws of electromagnetic theory.

If we accept this extension of the theory, it looks at first sight as though all the so-called laws of nature are mere identifications—that the mind singles out for recognition those qualities which as a matter of mathematical identity must necessarily obey the laws it despotically imposes. The laws of mechanics, of electro-dynamics, and of gravitation cover almost the whole field of physics; and yet we have seen that not one of these imposes any constraint on the free arrangement of the external World. Are there then no genuine laws of the external World? Is the universe built from elements which are purely chaotic?

It can scarcely be doubted that our answer must be negative. There *are* laws in the external World, and of these one of the most important (perhaps the only law) is a law of atomicity. We have learnt that a certain quality of the World distinguishes matter from emptiness; we have not learnt why the quality called matter exists only in certain lumps, called atoms or electrons, all of comparable mass. It might be suggested that atomicity arises from a discontinuity in our

[1] The relativity-theory seems almost to ignore the electrical theory of matter which is now so generally accepted; and it even has to contradict the *unqualified* statement that all mass is caused by an electromagnetic field. But there is no real disagreement. The electrical theory of matter has to admit that there is something of unknown nature which holds together the charge of an election; and this extra element in the constitution of matter cannot be ignored in the theory of the gravitational relations of matter.

perceptions which can only vary by finite jumps; but atomicity is not primarily a matter of perception, and the atoms are needed in the analytical theory to account for phenomena which appear continuous to perception. A more likely suggestion is that our analysis into point-events is not final; and if we would carry the analysis beyond the point-event to something still more fundamental, then atomicity and the remaining laws of physics would become obvious identities. This may well be the case; and indeed the general attitude of physicists towards theories of nature is that an explanation of this kind is the only one which could be recognised as an ultimate explanation. But the proposed further analysis starts on a different footing from that which we have hitherto conducted. The difference may perhaps be expressed by saying that atomicity specialises the external world, whereas the other laws of physics specialise the mind. I mean that, starting from the postulate that the mind can appreciate only relations, the theory we have described is, or is intended to be, the most general possible theory of the way in which relations can combine to form permanent substance; and accordingly the laws of physics which result depend solely on this postulate as to the mind. Whatever the constitution of the external world,[1] we can pick out a four-dimensional aggregate of entities which we may take to be our point-events since these have been left undefined. But if we attempt to push the analysis behind the point-events, we are, I think, bound to particularise the structure. The investigation, therefore, will begin to distinguish the actual order of nature from other conceivable conditions, and the resulting properties are the true laws of nature.

Whilst we recognise that probably there are true laws of nature, it is perhaps significant that we have not been able to formulate any of them in a general way. Atomicity is manifested not merely in matter, but in connexion with radiation in a large number of phenomena known as quantum phenomena. Our present attitude before these discoveries is one of bewilderment; they have baffled attempts to formulate a general law; and the most successful partial explanations proceed on lines which outrage the canons of thought of the older school of physicists. Thus the domain, where the mind of the physicist has hitherto triumphed, comprises only those laws which have not their seat in the external world, but

[1] A sufficient complexity is, of course, required. It is not necessary that the substratum from which we pick out the point-events should be four-dimensional. The straight lines in three-dimensional space form a four-dimensional aggregate.

spring ultimately from the mind. Will the human mind prove equal to formulating the genuine laws of a possibly irrational world, which it has had no part in shaping?

It must be admitted that the atomicity of matter presents a great difficulty from our present point of view. Matter is a property of the world to which the human mind attributes an exaggerated importance for reasons which Nature would regard as irrelevant; yet she seems to be in collusion with mind in singling out this property for atomicity. I can only suggest that the difficulty might disappear if we understood better the true relation between atomicity of matter and the more general atomicity which underlies all quantum phenomena. As far as we can understand it at present, there is some kind of atomicity of the quantity known in mechanics as *Action*, and this seems to be the fundamental origin of all atomic phenomena. If so, that must be Nature's own idea, for which she is in no way indebted to us. On Weyl's theory, Action is chosen because (to put it crudely) it is the only property of the World that could be atomic. Other properties cannot be measured in absolute terms, so that we could attach no meaning to the statement that each atom contains an equal amount of the property; but Action is a pure number, and one unit of Action is a definite amount everywhere. If then we can account for the apparent atomicity of matter as resulting from the quanta of Action, the difficulty alluded to will disappear; but this is at present a speculation.

The physical theories which form the bases of this argument are still on trial, and I am far from asserting that this philosophy of matter is a necessary consequence of discoveries in physics. It is sufficient that we have found one mode of thought tending towards the view that matter is a property of the world singled out by mind on account of its permanence, as the eye ranging over the ocean singles out the wave-form for its permanence among the moving waters; that the so-called laws of nature which have been definitely formulated by physicists are implicitly contained in this identification, and are therefore indirectly imposed by the mind; whereas the laws which we have hitherto been unable to fit into a rational scheme, are the true natural laws inherent in the external world, and mind has had no chance of moulding them in accordance with its own outlook.

III.—OMNIPOTENCE AND PERSONALITY.

By W. M. Thorburn.

§ 1. God is good, and God is great. But it is mere poetry to call him Omnipotent. He is too obviously limited by the intractability of lifeless matter, and the wilfulness of His own living creatures. His plans for the harmonious perfection of the world are too conspicuously marred and thwarted by dolts, devils, and democrats. As the Anglican Baring-Gould said in 1897: "The new (Christian) revelation was the flower and fulfilment of Mosaism". But, "God's first purpose has been partially frustrated".[1] Here and elsewhere, he concurs with the fuller statement of the same position by the Presbyterian Principal Miller of Madras in 1888: "The Church has taken Israel's place. . . . And Israel's sad experience of the surrender of high ideals . . . has been repeated. . . . Those who led the Reformation had a place to fill, like that of Samuel, and Saul, and David. . . . But it was on a lower level, that they were forced to work."[2] Dr. Miller's context shows, however, that he does not consider the Reformers personally inferior to the Judges and Kings of Israel.

§ 2. "Philosophy and Science alike demand belief in a Personal and Limited God":[3] declares the leader of English Pragmatism. "For me a Person is finite or is meaningless":[4] is the emphatic opinion of the Oxford "Absolute"

[1] S. Baring-Gould: *Study of St. Paul*, ch. iii., pp. 72 and 70. See also p. 431.

[2] W. Miller, C.I.E., D.D.: *The Least of all Lands*, ch. vii. (Shiloh).

[3] F. C. S. Schiller: *Riddles of the Sphinx* (1891), ch. x., § 7, p. 316 (new edn., 1912). Dean Rashdall (of Carlisle), one of the most enlightened dignitaries of the Church of England, has courageously said on p. 8 of his *Doctrine and Development* (1898): "Mr. Schiller deserves immense gratitude from all Christian theologians, for the logic and boldness, with which he has ventured to maintain the finitude of God". It is much to be desired, that Dr. Schiller's convincing reply, to a recent paper on *Omnipotence* by Archbishop D'Arcy of Dublin, should soon be made more widely accessible, than it can ever be in the *Proceedings* of the Aristotelian Society (April, 1918).

[4] F. H. Bradley: *Appearance and Reality*, p. 532 (2nd edn.).

leader, F. H. Bradley. And Dean Rashdall virtually concurs: "Everything real is in that sense finite. God is certainly limited by all other beings in the Universe, . . . and in the frank recognition of this limitation lies the only solution of the Problem of Evil, which does not either destroy the goodness of God, or destroy moral distinctions altogether. . . . Personality is undoubtedly inconsistent with the idea of Absolute or Infinite Being."[5] Canon Mozley had previously admitted much in criticising Augustine's notion. "Does it (Omnipotence) belong to the class of full and distinct, or of incomplete truths? Certainly to the latter; for, there appears at once a counter-truth to it, in the existence of Moral Evil, which must be referred to some cause other than God."[6] Harnack says of an earlier Father: "But the omniscience and omnipotence of God have a limit, which indeed according to Origen lies in the nature of things".[7] And "Deus non potest naturas rerum mutare": declared even that pillar of orthodoxy Francis de Vittoria († 1546), founder of the Salamanca School of Neo-Scholastic Theology.[8] Duns Scotus († 1308) had already denied the rationality of the notion, that a First Cause could produce immediately the effects of Secondary Causes. Such a notion could be only a matter of faith: "Et hoc apparet quod ista propositio: Quidquid potest causa effectiva prima cum causa secunda, potest per se immediate: non est nota ex terminis, neque ratione naturali, sed est tantum credita".[9] So far as we can

[5] H. Rashdall: on Personality Human and Divine, in Sturt's (Oxford) *Personal Idealism* (1902), pp. 390 and 392. See also his *Doctrine and Development*: Sermons I. and XVI. And his Essay: *Is God Omnipotent:* in *Contentio Veritatis* (1902), 43, 45. In the heading for these pages in the Table of Contents, they are summed up as follows: "The existence of evil requires us to believe, that in a sense God's omnipotence is limited". Compare Dr. MacTaggart, in *Some Dogmas of Religion* (1906): "If a wise and good being has used means to an end, this is a positive proof that he is not omnipotent". For, if he were: "He could get the ends without the means": ch. vi., § 164, p. 201. See J. S. Mill's *Examination of Hamilton*, ch. 24, p. 542 (in 4th edn.); where the *Theodicy* of Leibnitz is explained, as involving restrictions on the power of Providence.

[6] J. B. Mozley: *Augustinian Doctrine of Predestination*, ch. ii., p. 29.

[7] A. Harnack: *History of Dogma*, Div. I., Bk. 2, ch. 6, p. 350 of vol. ii. (in English). Origen: *Contra Celsum*, I., 20; and V., 23.

[8] F. de Vittoria: *Relectiones Theologicae*, X. (De Homicidio), § 6. Compare: "In many cases, the moral good or evil is so intrinsic to the very nature of the acts, that *God Himself could not change* the radical difference between them": p. 24 of *Moral Principles and Medical Practice*, 4th edn. (St. Louis, 1905); by Prof. C. Coppens (S.J.) of Omaha, U.S.A. (Creighton Medical College).

[9] Duns Scotus: *Opus Oxoniense*, I., D. 2, Q. 1, Scholium 3

see, God acts mainly through impressions on the minds of his intelligent creatures.

§ 3. Ockham († 1347) had plainly declared: "Deus non posset": in regard to a Contradiction-in-terms.[10] And the excommunicated Invincible Doctor did not stand alone among Scholastic Philosophers, in limiting Omnipotence to what is not Self-contradictory. He was indeed more chary of theistic limitation, than his more orthodox rivals. For, he asserted the Dispensing power of God over His own Decalogue, and over the "Natural Law" which it embodied. But they were troubled by some conspicuous Hebrew exceptions to the Sixth, Seventh, and Eighth Commandments: Abraham's intention of killing Isaac, Hosea's harlot, and the conduct of Moses to the despoiled Egyptians. The manipulation of these incidents of Sacred History by Thomas Aquinas († 1274) is a very curious instance of early Casuistry.[11] Duns Scotus, like the less definite Bonaventura († 1274), drew a radical distinction between the Second Table, which was concerned with interhuman relations, and the First Table, which (being *Circa Deum*) could not be dispensed from without Self-contradiction.[12] Bishop Durand of Meaux († 1334) modified this division by an overlapping distinction between the eight negative precepts, and the two affirmative precepts: to observe the Sabbath, and to honour parents: a distinction having some affinity with that between Duty and Merit. The Affirmative were dispensable; and so was the precept "Non occides" in some classes of cases. "Si verbum, *Non Occides*, generaliter sumatur pro quacunque hominis occisione sic dispensabile: si vero sumatur pro occisione hominis prout eam prohibet *ratio naturalis*, sic etiam illud indispensabile esse."[13] This fine-drawn subtlety in effect bases that Precept on Natural Equity, and righteously assumes that *Ratio Naturalis* does not condemn killing in self-defence or just public punishment. Vittoria,

[10] "Posse facere omne illud, quod non includit contradictionem fieri": Ockham; *Quodlibeta*, VI., § 1. See also his *S.T. Logic*, I., ch. 15; and *Centiloquium* (Conclusio 5).

[11] T. Aquinas: *S.T.*, I.-II., Q. 94, A. 5; *ibid.*, Q. 100, A. 8 (3); and *S.T.*, II.-II., Q. 104, A. 4 (2); *ibid.*, Q. 154, A. 22 (2).

[12] D. Scotus: *Opus Oxon.*, III., D. 37, Q. 1. Bonaventura: *In SS.*, I., D. 47, Q. 4, pp. 845-848 in *Tom.* I., of the new Quaracchi edition. Albert deals with the Decalogue and *Jus Naturale*, at the end of Q. 80 in Part I. of his *Summa Theol.*: "Meo judicio haec est falsa, Deus vult fieri mala. Et similiter ista, mala fiunt Deo volente": Q. 80, M. 2, A. 3, Particle 1, *Solutio* (p. 478): vol. xvii. of *Opera*, ed. Jammy.

[13] G. Durandus: *In SS.*, I., D. 47, Q. 4 (15). The Occamist John Major of St. Andrews († 1540) broadly affirmed the Dispensability of *Non Occides*: *In SS.*, III., D. 37, Q. 10 (14).

though reckoned a Thomist, substantially accords with Durand's opinion of *Non Occides*, and uses for a similar purpose the further qualification, *ex intentione*: "Nam de homicidio non ex intentione, quale est in defensione sui, aut Reipublicae, latior est disputatio".[14] The prevailing Latin opinion is that of Aquinas: *S.T.*, I.-II., Q. 100, A. 8 (3): who regards the whole Decalogue as Indispensable, because all is an expression of the Divine Nature. But he eludes the historical and practical difficulties, by a theory of Special Commands which must not be called Dispensations. Suarez († 1617); after giving a critical historical summary of the various opinions, in chapter 15 of the Second Book of his powerful *De Legibus*; finally Resolves in § 28: "Deus in nullo precepto proprie dispensare in Decalogo, aut extra Decalogum". In chapter 6 (§ 11) he had declared: "Dei voluntas, prohibitio, aut praeceptio, non est tota ratio bonitatis et malitiae".

§ 4. The common parrot-chaunter of Divine Omnipotence will be very much astonished, if he should ever take the trouble to search the Scriptures, and find out the very slender and superficial warrant, which Augustine had for his extravagant assumption of Literal and Logical Omnipotence. The epithet *Omnipotent* appears only once in our "Authorised" Bible: *Revelation* xix. 6: "The Lord God omnipotent reigneth". It is translated from the Greek word *Pantokrator*, which is found in nine other passages of the New Testament. All are rendered *Almighty;* and all except one occur in the poetic and rhapsodic Apocalypse ascribed to St. John. The exception is in the *Second Epistle to the Corinthians* vi. 18. *Almighty* is not seen elsewhere in our *N.T.;* but frequently appears in the *O.T.*, and invariably as equivalent to the Hebrew *Shaddai:* 31 of the 48 instances being in the Arabian Drama of Job. In the Septuagint, *Shaddai* is variously represented: usually by *Theos*, *Kurios*, or *Pantokrator*. The last is used in 16 places: all in the poetic and rhapsodic book of Job. Pantokrator is not Classical, but Alexandrian Greek: a merely poetic and panegyric word occasionally found in the later contents of the Greek Anthology. Neither Pantokrator nor Almighty is a correct translation of Shaddai, which means Mighty, or Sufficiently Strong; as explained by Moses Maimonides (*circa* A.D. 1190), in his *Guide for the Perplexed* (I., 63). Only in the Book of *Ruth* (I., 20-21) has it been exactly rendered: as, "ho hikanos": The Sufficient. According to the Priestly writer of *Exodus* vi. (3), *El Shaddai* was older than *Jahve*: which was not known to Abraham, or even

[14] F. de Vittoria: *Relectiones Theologicae*, X. (De Homicidio), § 20.

to Jacob. But Wellhausen: in chapter 8 of his *Prolegomena* (339): has given good reasons for holding that Jahve was invoked, long before the time of Moses. The Hebrews had no theological dogma of Omnipotence. Jehovah was merely stronger than the gods of other nations: as Robertson Smith has explained in the Second Lecture of his *Prophets of Israel;* and Canon R. H. Charles in the First and Second Chapters of his *History of the Doctrine of a Future Life.* "The power of God is not assumed to extend to any of these impossibilities": declared Maimonides[15] (*G.P.*, III., ch. 15, p. 279). And Impossibility in particular cases was to him a matter of opinion, subject to legitimate variation. This exposition may have influenced Aquinas: either directly, or through his master Albert, whose acquaintance with Jewish and Arab philosophy led him to become the reviver of Aristotle. But the Angelic Doctor's halting, wriggling, hedging Conclusion on: *Utrum Deus sit Omnipotens*[16] (in *S.T.*, I., Q. 25, A. 3): is quite incompatible with the previous Conclusion (of A. 2): (Dei) "potentia activa est infinita". For, Infinity is meaningless, if coupled with any limitation. To say that, God can do anything which is not impossible, is no explanation of anything. It is a mere evasion of the issue: a pretended definition of an incomprehensible position by means of an ultimate indefinite negative. Our *Almighty* comes directly from the Vulgate: nearly always from *Deus omnipotens.* In some few cases we find plain *Deus*, or *Dominus.* Jerome, and the earlier writers of Latin versions, may have simply made a general use of the most obvious plausible equivalent of *Pantokrator;* or may have been influenced by the courtly style of Vergil, Ovid, and other Latin heathen poets in regard to Jupiter: *e.g.*, *Aeneid*, II., 689; *Georgica*, II., 325; and *Metamorphoses*, I., 154. But nobody will venture to affirm that these poets used *Pater omnipotens*, with the literal and absolute Augustinian significance. They believed as firmly as Aristotle, in the Eternity of Matter: "Ex nihilo autem nihil fit".[17]

[15] M. Maimonides: *G.P.*, I., ch. 63, p. 95 in Friedlander's English version. *Pantokrator* means All-Ruling, rather than All-Powerful: something like the Sanskrit *Chakravarti*, or Universal Emperor. *Pagkratēs*, the exact Greek equivalent of *Omnipotens*, is applied to *Zeus* a the beginning of the Hymn of Cleanthes. Also in the plays of Aeschylus: *e.g.*, *Eumenides*, 878: but clearly with poetic license, not in philosophic definition. For, Zeus is the slave of Destiny (*Moira*), like all the other gods of Greek Tragedy: F. A. Paley's Preface to his *Aeschylus*, p. 18.

[16] Aquinas: *S.T.*, I., Q. 25, A. 3. "Ut hominem esse a inum": is one of his Absolute Impossibilities (A. 3).

[17] "Ek te mē ontos ouden an genesthai": *Physica*, I., 8 (2), line 30. Compare Lucretius: *Rerum Natura*: "nil posse creari de nilo," I., 155-156:

§ 5. "The power of the Creator once recognised as limited": held J. S. Mill:[18] "there is nothing to disprove the supposition that his goodness is complete". And in the weighty words of W. R. Greg:[19] "Half the difficulties which lie in the way of believing in a Personal God, as the Ruler as well as Creator of the Universe, are of our own making. They are wholly gratuitous, and arise out of the inconsiderate and unwarranted use of a single word: Omnipotent." At the opposite pole of philosophy, we find the foremost living Cambridge expositor of Hegel, coming on this practical matter to the same conclusion. "There are many things in the Universe which are intrinsically bad. Such for example is Pain. . . . To use an intrinsically evil thing as a means, when the end could be obtained as well without it, would deprive the agent of all claim to goodness as well as wisdom."[20] Every observer of Spiritual Pathology must very well know, that (since the decay of

"neque ad nilum interemat res," I., 216. Also I., 237-239, and 518-519. And II., 287, and 303. After long banning by Theologians, this great scientific postulate seems at last to have got a fair chance of at least a fair hearing. Prof. Soddy, F.R.S., who has played so great a part in the epoch-making discovery of Chemical Isotopes; has now been allowed to expound the truth to orthodox Christians, in the *Modern Churchman* of November, 1919. His *Contribution of Physical Science to Humane Philosophy* boldly affirms (on p. 384 of Part II.), that: "Matter and energy cannot be created or destroyed. The universe is eternal." He goes on to protest, that: "The theist must not push his conceptions of the deity and life into the inanimate universe; and I put the Rubicon between mechanism and life," p. 380. "The idea that physical power is one of the attributes of deity; and the conception of an all-powerful being directing the universe and the physical affairs of men, has left behind it nothing but a legacy of calamity. . . . There is no such being": p. 383. "The evils that this world suffers from are directly traceable to the enthronement of God in the wrong place," p. 384. In regard to Chemical Isotopes, refer to Prof. Soddy's Lecture on the *Complexity of the Chemical Elements;* in *Nature* of 19th and 26th July, 1917: pp. 414 ff. and 433 ff. of vol. 99.

[18] J. S. Mill: *Three Essays on Religion*, p. 252 (Theism, § 5).

[19] W. R. Greg: *Enigmas of Life*, Preface 98. "Non aliunde dissidia in religione pendent, quam ab ignoratione grammaticae": said Joseph Scaliger, the keenest of critics, and the most exact: *Scaligerana*, I., p. 96 in edition of 1740; not 86 as given by Pattison in his *Essays* (I., 155) and *Casaubon* (441). Translated freely: Religious Controversy comes from dullards fumbling with ambiguous words. "Half the controversies in the world are but verbal ones": said J. H. Newman: "and could they be brought to a plain issue, would be brought to a prompt termination. . . . We need not dispute, we need not prove,—we need only *define*." *University Sermon* IX. (On Reason and Faith), pp. 192-193. "Grammar is related to Logic, as clothes to the body": said Schopenhaur, in his Criticism of the Kantian Philosophy: *World as Will and Idea*, II., p. 85, in English.

[20] J. M. E. MacTaggart: *Some Dogmas of Religion*, ch. vi., § 164, p. 201.

belief in Eternal Fire-Torture), the stupid Stoic heresy of Absolute Omnipotence has been the most fruitful source of doubt, despair, and final disgust with Biblical Religion; on the part of the very men whose nature is most religiously inclined.[21] The only rational and practical answer to the children's query: "Why does not God kill the naughty Satan": is this. He cannot kill an immortal being; but you will help Him to beat all the devils, if you only keep the Ten Commandments.[22] Robinson Crusoe never thought of that, when the same question was put to him by his Man Friday. He could only say that God was so kind, as to give a chance of repentance even to the Great Enemy: quite oblivious of the intermediate agony of billions and trillions of less guilty (if not quite innocent creatures), which must certainly result from entertaining such a phantasy of remote possibility.

§ 6. "One only form of belief in the supernatural,—one only theory respecting the origin and government of the universe,—stands wholly clear both of intellectual contradiction and of moral obliquity. It is that which, resigning irrevocably the idea of an omnipotent creator, regards Nature and Life, not as the expression throughout of the moral character and purpose of the Deity; but as the product of a struggle between contriving goodness and an intractable material, as was believed by Plato; or a Principle of Evil, as was the doctrine of the Manichaeans. A creed like this, which I have known to be devoutly held by at least one cultivated and conscientious person of our own day, allows it to be believed that all the mass of evil which exists was undesigned by, and exists not by the appointment of, but in spite of the Being we are called upon to worship. A virtuous human being assumes in this theory the exalted character of a fellow-labourer with the Highest: a fellow-combatant in the great strife; contributing his little, which by the aggregation of many like himself becomes much, towards that progressive ascendancy, and ultimate complete triumph of good over evil, which history

[21] Compare Prof. Percy Gardiner: *Exploratio Evangelica* (1899), Book I., ch. 5, p. 53: "A very great part of the religious difficulties of educated people arises simply because they do not look at facts in their spiritual life, but start from some *a priori* and unwarranted notions, and fall into disgust and despair, because they find them not suited to the facts of life".

[22] See Robertson Smith: *Prophets of Israel*, p. 40 (2nd edition): "The Ten Words, the fundamental documents of the religion of the Old Testament". And Lehmkuhl on Moral Theology in the *Catholic Encyclopædia* XIV., 603: "The Decalogue constitutes the principal Subject-matter of Christian Morality". The reference to *Robinson Crusoe* is Part I., ch. 15 (middle).

points to, and which this doctrine teaches us to regard as planned by the Being, to whom we owe all the benevolent contrivance we behold in Nature. Against the moral tendency of this creed no possible objection can lie: it can produce on whoever can succeed in believing it, no other than an ennobling effect": so wrote John Stuart Mill, the noblest defender of Liberty; regarding the Utility of Religion, on pages 116 and 117 of his *Three Essays on Religion.* It is only to be regretted that he did not put *and*, instead of *or*, after *Plato.* The two suppositions are quite consistent; and both are necessary to complete a rational theory of the Universe, as actually perceived by ourselves. The latter supposition (of an independent Power of Evil) is moreover very far from being peculiar to Mani and his master Marcion. It implicitly pervades all the Hebrew Scriptures, except the Aramaic Drama of Job; and likewise most of the Greek New Testament. It was indeed tolerated (at least) in Christian Theology, down to the general acceptance of Anselm's Theory of the Atonement. The main morbific element of the creeds and cults of Marcion and Mani, lay in their identification of Jehovah with Satan, and consequent invention of a new Anti-Hebrew Divinity.

§ 7. "Evil is as real as good, is as real as life": [23] say all Pragmatists, and every other candid man of action or science. But Augustine *would* have a God of Absolute Omnipotence, and was therefore driven to a brazen Hyper-Stoic denial of the existence of Evil.[23] "Evil be thou my Good": became his motto, in a sense not so very different from that of Milton's Satan. Evil was only Imperfect Good, he asserted; or at worst a Plotinian *Sterēsis:* a merely privative or negative idea.[24] Yet some Evil is Pain; and to all of us Pain is the

[23] F. C. S. Schiller: *Riddles of the Sphinx*, ch. x., § 5, p. 310. See further, E. Zeller: *Stoics and Epicureans*, p. 188, in English. And R. D. Hicks: *Stoics and Epicureans*, pp. 42-53.

[24] Plotinus on Providence: *Ennead* III., 2, 5, p. 259 (Volkmann): "Hotos de to kakon elleipsin ton agathon theteon". See p. 215 of Fuller's *Problem of Evil in Plotinus* (1912). Athanasius: *Contra Gentes*, IV: "Ea vero non sunt, quae mala sunt". Augustine: *Confessions*, III., 7 (12): "Malum non esse nisi privationem boni". Also *C.D.*, XI., 9 (end): "Mali enim nulla natura est, sed amissio boni mali nomen accepit". Likewise *Mor. Manich.*, II., 2: "Malum est . . . deficere ab essentia". Similarly, *De Lib. Arb.*, III., C. 8 (22). For his view of Omnipotence, see *C.D.*, V., 10 (1): "Dicitur enim omnipotens faciendo quod vult, non patiendo quod non vult". Indirectly however he admitted Ockham's contention as to Self-contradiction, in his *De Natura et Gratia*, 49: "Nec peccare, . . . nec se negare potest". John Scotus Erigena distinguishes *Privatio* from *Negatio*, as presupposing something positive: "Privatio enim habitudinis est ablatio": *De Divisione Naturae*, III., 5.

most positive thing in the Universe. No other experience impresses itself so deeply, and so fixedly day by day, on every sentient sac of vitality. We do not need to go to battle, and get a bullet in the knee; for a sufficient refutation of the incredible Stoic fatuity revived in the *Theodicy* of Leibnitz, and recently repeated by an Oxford Professor of Moral Philosophy:[25] that Pain is a mere privation of Pleasure. We know on the most empiric and trustworthy of all authorities, the Ever-Blessed Sir James Simpson, that: "Pain is *per se* . . . destructive and even fatal in its effects. It exhausts the principle of life".[26] He adds emphatically: "Mere pain can destroy life".[26] And that is not the worst of it. Death is inevitable sooner or later; and may be a blessing, even if premature. But Pain is always a wanton evil, moral as well as physical, whenever it is not a proportionate punishment. Pain is inconsistent with the healthy exercise of natural

[25] J. A. Smith: *On Feeling*, in *Proceedings* of the Aristotelian Society (1913-14), XIV. (N.S.), 71-74. Another Oxford Hegelian, Bernard Bosanquet, admits in his *Value and Destiny of the Individual* (ch. vi.) that: "Pain is a fact," p. 173: but will not allow it to be anything more than "obstruction to activity"; and elsewhere declares it "correlative to contradiction," p. 167. The reference to Leibnitz is: *Theodicee*; La Bontè de Dieu, Part II., § 153. Hartmann has truly said: "Pain thrusts itself on Consciousness . . . ; not so Pleasure": *Met. Unconsc.*, XIII., p. 73. And Schopenhauer: "Evil is just what is positive; it makes its own existence felt": *Leiden der Welt* (*Parerga*, § 150). Similarly, in his *Will and Idea*, iv., § 62: "The concept of wrong is original and positive; and the concept of right derivative and negative". And the aged Huxley declared in his last testament of Science: "If anything is real, pain and sorrow and wrong are realities": *Evolution and Ethics* (1893), p. 71.

[26] In the *Life of Sir James Simpson*, by J. Duns, p. 253. In a letter dated 14th Nov., 1848 (on p. 215), he indignantly contended: "The true moral question is: *Is a practitioner justified by any principle of humanity in not using it* (chloroform)? I believe that every operation without it is just a piece of the most deliberate and coldblooded cruelty." Nearly three centuries earlier, Ambroise Paré († 1590), the great pioneer of reformed surgery, had written: "Pain ought to be assuaged, because nothing so much dejects the powers of the patient". This is quoted by Simpson on page 82 of his *Anaesthesia and Hospitalism;* along with Galen's aphorism: *Dolor dolentibus inutilis est.* We have since learned from Romanes: *Mental Evolution in Animals* (1883), ch. viii., p. 107: that there is a "quantitative relation between the amount of pain and the degree of hurtfulness". William James, who was a surgeon as well as a philosopher, has added concretely, that Pain is a cause as well as a consequence of Suppuration: in his *Psychology* (1890), vol. ii., p 612. If pain be prevented by Hypnotism, a burn will not be followed by the usual inflammatory effects. As he justly observes, these new facts throw new light on the self-wounds of Dancing Dervishes, and the *Stigmata* of Visionary Ascetics.

powers, and the healthy play of natural affections.[27] Unmerited Pain cannot then come from God. But it is one of the commonest incidents of life in every grade. Therefore it comes because God cannot yet prevent it. He can only enlighten the best men, and inspire them with a holy ardour to find and apply the best means of mitigation. In the new heaven and the new earth: "There shall be no more pain": as we learn from the *Revelation* of St. John xxi. 4.

§ 8. Pain is indeed the most positive thing in the world; and the fear of it is the strongest of all motives in Man and Beast: far stronger than the hope of pleasure. Pain and Pleasure may be logical Contraries, or Counterparts, like Right and Duty; but are certainly not Contradictories,[28] like Right and Wrong. The real contradiction or negation of Pleasure is Apathy or Inanity: the real contradiction or negation of Pain being Serenity or Tranquillity: *Anaesthesia* of Body, or *Ataraxia* of Mind. Pain and Pleasure, in the widest common sense, may each counterbalance or nullify the other, in Ethics or Emotion, but not in Physics or Sensation. "Mille piacer non vaglion un tormento": sang Petrarch[29] (*Canzon*, 231): "a thousand pleasures are not worth a single grievous pain". The finest wines and dishes can do no more, to extinguish the pain of a broken joint, than to unite the fracture. The systematic substitution of such words as Happy or Glad, and Grievous or Miserable; for the mental conditions commonly spoken of as pleasant or painful; would prevent a great deal of confusion in thought and expression. Delight and Distress would serve well enough as corresponding nouns. Physical Pain (*Odunē*) and Pleasure (*Hēdonē*): the only phenomena to which these com-

[27] The good and very experienced Dr. Samuel Johnson wrote to Langton, on a bed of pain, in September, 1783: "Disease produces much selfishness. A man in pain is looking after ease, and lets most other things go." Again, in August, 1784, he wrote of: "A sick man's impatience of the present". And about the same time to Windham: "His thoughts are necessarily concentred in himself; he neither receives nor can give delight; his enquiries are after alleviations of pain, and his efforts are to catch some momentary comfort": *Life* by Boswell (ed. G. B. Hill), IV., 240, 361-362. It is even said that he once went so far as to exclaim: "Every sick man is a villain".

[28] "Painful feeling in a certain sense has a positive opposition to Pleasant; for it is its contrary, and not its mere contradictory": *General Metaphysics* by John Rickaby, S.J., I., ch. 4, p. 147. *Cf.* Bain: *Emotions and Will*, ch. i., §§ 11, 12.

[29] F. Petrarca († 1374): Canzoniere 231 (Salvo-Cozzo); or I., 176 (Volgata). Compare Grant Allen: *Physiological Aesthetics* (1877), ch. i., § 3, p. 26: "Our greatest Pleasures fall far short in intensity of our greatest Pains". William James speaks highly of this neglected book, in his *Psychology*, vol. i., ch. 5, p. 144.

monly contrasted terms can be consistently and lucidly applied: are distinct positive affections of the Sense of Touch; and that is the fundamental sensibility (*Sensus Vagus* or *Communis*), of which Sight, Smell, Taste, and Hearing, are the most conspicuous special manifestations. Aristotle put this very clearly in regard to Taste, in his *De Anima* (III., 12); and hinted as much in regard to the other Special Senses in the following chapter (13): "Without Touch (*Haphé*) there can be no other sense". Hamilton has followed this lead in his *Metaphysics* (II., 522): "All sensible cognition is, in a certain acceptation, reduced to Touch, and this is the very conclusion maintained by the venerable authority of Democritus": as recorded by Aristotle in his *De Sensu*, ch. 4 (p. 442*a*, 29). Hobbes had already said in his *Human Nature*, ch. 2, § 4: "The immediate cause of sense or perception consists in this, —that the first organ of sense is touched and pressed". And Bain says without reservation: "Touch is the fundamental and generic sense, the firstborn of sensibility, from which, in the view of Evolution, all the others take their rise": *Emotions and Will*, ch. vii., § 4. Pain (properly so called) may be further explained, with general sufficiency, as the effect of excessive pressure on the afferent nerves; though Hartmann: in his very physiological *Philosophy of the Unconscious* (A., ch. 7, and B., ch. 4): maintained that even without nerves Sensation is possible.[30]

§ 9. Theology, Moral and Dogmatic, still festers from the famous attempt of Plotinus, Athanasius, and Augustine; to evaporate the mystery of Evil by calling Evil, "Imperfect Good". The Neoplatonic Augustinian Negation was equally accepted by Proclus, the last of the Great Pagans († 485). He says near the beginning of his *De Malorum Subsistentia*: "Etenim qualiter esse hoc possibile, quod omnino est expers principii . . . Nusquam entium oportet malum esse". And at the very end: "Faciunt Dii malum, sed tanquam bonum": [31] imitated perhaps by Ockham, in his, "vult (Deus) *mala*, non

[30] Hartmann: *Phil. Unc.*; vol. i., p. 173; and vol. ii., 147, in English.

[31] Proclus: *Opera*, ed. V. Cousin, vol. i., pp. 198 and 288. Ockham: *Quodlibeta*, III., § 2. Neo-Platonism, as Milman (*E.C.*, II., 323) said of Manichaeism, was a "vast Eclecticism". Its composition has been fully (if sometimes questionably) set forth in Harnack's Third Appendix to the First Book in the First Division of his *History of Dogma*; vol. i., pp. 336-364, in English. It was a misty and moonshiny farrāgo of pernicious perversities: like The One, The Absolute, and The Dignity of Man: drawn mainly from Platonism, Stoicism, and divers Oriental Cosmogonies. No serious Greek Philosophy was entirely banned, except that of the lucid, just, and practical Epicurus: the true Ethical Epigonos of Aristotle, although regarded as antipodal in the Middle Ages.

tamen vult *malé*". The Pseudo-Dionysius of the early Sixth Century borrowed copiously, not only the ideas, but the very phrases of Proclus; and thus they became part of Christian Philosophy even down to the Nineteenth Century, though exposed in the Fifteenth by Laurentius Valla. The recent investigations of Hugo Koch at Tubingen (1895), and Joseph Stiglmayer at Innsbruck (1898), have shown that a large part of Ch. IV. in the *De Divinis Nominibus* of the Anachronic "Areopagite" has been bodily transferred from the *De Malorum Subsistentia* of the Byzantine Hegel.[32] Much also has been incorporated there and elsewhere, from other works of Proclus; especially his *Institutio Theologiae*, *Theologia Platonis*, and Commentaries on the *Timaeus* and the *Parmenides*. "Providentia est in omnibus, malum igitur secundum se non est": wrote the Pseudo-Dionysius in his *De Divinis Nominibus* (IV., § 3). "God's in His heaven, All's well with the world": a world containing at least a million of lepers, even in the Age of Proclus; and more than twice as many victims of Cancer, when Browning wrote *Pippa Passes* in his youthful complacency.

§ 10. Anselm indeed practically confined that negative character to Moral Evil (*Malum Injustitiae*). This he distinguished from *Malum Incommoditatis*, which might be positive in some forms, such as *Dolor et Tristitia*.[33] But down to the Nineteenth Century, Trinitarian Theologians got no further. In this respect indeed, the Reformation was even Reactionary; and Leibnitz less "Enlightened" than the "barbarous" Scholastics whom he derided. The Devil was regarded as acting by God's permission, or even as His roundabout agent. And all pain was to be accepted as "God's will"; till Maurice (in 1853) boldly joined forces with Simpson, and protested that: "Pain is an evil and comes from an enemy". . . . "Hold fast that conviction," he insisted, " . . . Pain is the consequence of disorder, . . . a bondage, a sign that some tyrant has intruded himself into this earth of ours."[34] A quarter of a century later, Herbert

[32] See the *Catholic Encyclopædia*, V., 18. The *Institutio* of Proclus has very lately (1918) been translated into English by A. C. Ionides: as *The Elements of Theology* (Natural). Like the *Ethics* of Spinoza, it is mathematically arranged.

[33] Anselm; *De Casu Diaboli*, 26. Kant draws a similar distinction between Pathological and Moral Pleasures, in the Preface to his *Metaphysical Elements of Ethics: Works* (ed. Rosenkrantz), VIII., 222: Abbott's Translation, 289. But he refused the name of *Evil* to anything, save an infraction of a Categorical Imperative.

[34] F. D. Maurice: *Theological Essays* (1853), IV., 61-67 in 2nd edn. St. John's Gospel speaks thrice of the evil power of the Prince of this

Spencer formulated broadly: "Pain is the correlative of some species of wrong".[35] And half a century later, the Pauline Sir William Ramsay admitted: "We are all in some way aware, that evil is wrong because it is painful".[36] On the side of rational jurisprudence, Bentham was even more intensive and comprehensive than Spencer. "Pain is in itself an evil, and without exception the only evil."[37] And he built on a solid basement in the *Ethics* of Aristotle: "Pain is evil and ought to be avoided".[38] The controversy has been clearly summed up by Henry Sidgwick, the most judicial of modern philosophers, at the close of his *Lectures on Kant*.[39] "Kant's notion of *Ens Realissimum* is to be identified with the theological notion of God, and to have all the moral attributes of Deity." This "assumption of the compatibility of all positive predicates, made in the formation of this Transcendental Ideal, requires us to hold—what Leibnitz of course did hold—that Evil, moral and physical, is a merely negative attribute. But I can see no reason to suppose this. Physical pain seems to me as positive as pleasure; and though much moral evil is doubtless analysable into mere *defects* or negations of positive quality, I do not find this conceivable in all cases, as for example in the case of pure malevolence."

§ 11. Yet, in spite of all these weighty Testimonies, to the Blessed Truth of God's will for the harmless happiness of all His sensitive creatures: we are still in grave danger from a Clerical-Legal-Medical conspiracy for booming the "Moral

World; xii. 31; xiv. 30; and xvi. 11. Satan's "Existence seems a reasonable postulate, which best helps to explain the mysterious problem of Evil": wrote Dr. A. Smythe Palmer, on *The Fall of Lucifer*, in the *Hibbert Journal* of July, 1913, p. 766. Even F. H. Bradley does not regard devils as impossible: *Truth and Reality*, 440 (n.). Refer also to his *Appearance and Reality:* chaps. 25 and 26.

[35] H. Spencer: *Data of Ethics* (1879), ch. 15, § 101.

[36] Sir W. M. Ramsay: *Cities of St. Paul:* (1907), p. 18. Compare Harnack: *What is Christianity*, IV., 60: "He (Our Lord) nowhere says that disease is salutary, and that evil is a blessing. . . . To Him all evil, all misery, is something terrible; it is part of the great realm of Satan."

[37] J. Bentham: *Principles of Morals and Legislation*, ch. x. (Motives).

[38] Aristotle: *N.E.*, VII., 14: "Lupē kakon homologeitai kai pheukton". According to Plato (in the *Protagoras* 354-355), the doctrine of Bentham had previously been asserted by Socrates, and admitted by Protagoras: "And even now, if you see any possible way in which evil (*kakon*) can be explained as other than pain (*ania*), or good (*agathon*) as other than pleasure (*hēdonē*), you may still retract. But I suppose that you are satisfied at having a life of pleasure which is without pain (hēdeōs katabiōnai ton bion aneu lupōn)": Jowett's Translation, I., 164.

[39] H. Sidgwick: *Lectures on Kant*, XII. (on Rational Theology), pp. 194-195.

Value of Pain," and even the "Beneficence of Disease": under pretence of the Supersanctity of Human Life. And Prof. Coppens (S.J.) of Omaha does not scruple to assume, that: "All the venereal diseases are there, to act as ministers of Heaven's justice, anticipating, and often mercifully averting, the punishments of the future world".[40] No preaching was ever more diabolical; since Augustine's argument in his *De Libero Arbitrio*:[40] that Sin itself; as well as the unmerited agonies of Birds, Beasts, and Babies; was contributory to the Perfection of the Universe! The callous may sometimes indeed be softened by a month of meditation on a bed of weakness. But where is the man who was ever morally improved by suffering amputation: because he got no chloroform? The truly pious Medical Professor George Wilson of Edinburgh, who suffered thus in 1843, wrote (on the contrary) in a long-subsequent letter to Simpson, of the: "Black whirlwind of emotion, the horror of great darkness, and the sense of desertion by God, . . . which . . . I can never forget".[41] An experience of helplessness may lower the rampancy of human pride, but no pain can be morally remedial, unless honestly understood as the consequence of the sufferer's definite wrongful conduct, and firmly associated with such conduct for the future. Pain can have no moral value, apart from fair and clearly-consequent punishment.

§ 12. The Antinomian Rogue's Religion has few more effective weapons than the 45th verse of the Fifth Chapter in Matthew's Gospel: the first chapter of his compilation commonly called the Sermon-on-the-Mount: "He maketh His sun to rise on the evil and the good, and sendeth rain on the just and the unjust". This triply fallacious text is bad science, bad morality, and (in view of the Old Testament) bad Theology. Let us take the last first. In *Leviticus* (xxvi. 4) and *Deuteronomy* (xxviii. 12), Moses is the vehicle of a promise: "If ye walk in my statutes and keep my commandments, and do them, then I will give you rains in their season". In the First Book of *Kings* (viii. 35) and Second Book of *Chronicles* (vi. 26), we learn from Solomon's Prayer on the brazen scaffold: "Heaven is shut up, and there is no rain, because they have sinned against Thee". And in his Book of *Proverbs* (xi. 31) he proclamed: "Behold the righteous shall be recompensed in the earth: much more the

Coppens: *Moral Principles and Medical Practice*, p. 117, 4th edn., 1905. Augustine: *De Lib. Arb.*; III., ch. 9, § 26; and ch. 3, §§ 68, 69.

[41] *Memoirs of George Wilson, M.D.*, by his sister; ch. vii., p. 297 ff. Given also by Duns: *Life of Sir J. Y. Simpson*, pp. 262-269.

wicked and the sinner". Isaiah (v. 6) threatened Judah: "I will command the clouds that they rain no rain upon" (my vineyard). Ezekiel (xxii. 24 and 26) prophesied against Jerusalem: "Thou art a land that is not cleansed, nor rained upon in the day of indignation. . . . Her priests have done violence to my law. . . . They have put no difference between the holy and the common." Amos (iv. 4) tells us that Jehovah, for reasons of righteousness: "caused it to rain upon one city, and caused it not to rain upon another city". And before Jehovah destroyed the Cities of the Plain, the One Just Man was warned to take away his family.

§ 13. It is bad Science, because any discrimination between good men and bad, in the matter of rain or sunshine, is physically impossible. It is practically, if not formally, equivalent to a Contradiction-in-terms; which even the most orthodox Scholastic philosophers generally treated as exclusive of Divine Omnipotence. The Just and the Unjust are so closely intermixed in space, time, life, and action; that material movements, of any considerable scope, are inconsistent with moral treatment of individual centres of sensation and subjects of vice or virtue. This is clearly admitted in such proverbs as: "The fathers have eaten sour grapes, and the children's teeth are set on edge": *Jeremiah* xxxi. 29; and *Ezekiel* xviii. 2. The Just and the Unjust may be of one blood. They sleep in the same bed, and sit at the same table. They walk abreast on the same pavement, and drive abreast in the same chariot. No effective or appreciable rain could fall from a patch of cloud-vapour, small enough to cover one person without covering his companion; or even small enough to cover one of two adjoining allotment-gardens without covering its neighbour. The rain falls, and the sun shines, at the same time on the good and the bad, because these things could not happen otherwise.[42] Physical evil befalls the righteous, and physical good is enjoyed by the wicked, because God cannot directly prevent such happenings. He can modify them only through Secondary Causes; mainly by working on mundane (and other subordinate) intellects, against the "blind forces of Nature," and the machinations of the Powers of Darkness. "Because sentence against an evil work is not executed speedily, therefore the heart of the sons of men is fully set in them to do

[42] As pointed out by Seneca: *De Beneficiis*, IV., 28: "Di quoque multa ingratis tribuunt, sed illa bonis paraverunt: contingunt etiam malis, quia separari non possunt. Satius est autem prodesse etiam malis propter bonos, quam bonis deesse propter malos. Itaque quae refers diem, solem (etc.) . . . pro universis invenerunt: excerpere singulos non potuerunt."

evil": exclaimed Solomon, in *Ecclesiastes* viii. 11. Can Archbishop D'Arcy, or anyone not cursed with a heart of icy ironstone, really believe that a good, omniscient, and omnipotent Heavenly Father, could have allowed the frigid and calculating monster, Richard Justin of Belfast, to go on for weeks and months (in 1909) slowly killing his little daughter, with crafty beatings arranged to conceal the evidence of murder? Is it not more reverent: in every way more truly pious: to believe that He is frequently baffled, in trying always to do the best He can? Is mere Power more worthy of our adoration (and ascription), than Justice and Lovingkindness? Does it not savour more of cringing to Mumbo Jumbo, than of looking up to Jehovah the Just?

§ 14. Finally, the text is bad Morality; because an omnipotent (or satispotent) Spirit, who so acted, could not be a "Moral Governor of the Universe". He would be cultivating Wrong; because, consequences being equal, men will generally prefer the pleasures of wickedness to those of an approving Conscience. The facts of life, as we see them every day, are the best proof; that, being Good, he cannot be Omnipotent. Men would soon cease to cheat, or be cheated, by means of Matthew's ungodly jingle of Sentimental Iniquity;[43] if the necessary and more perspicuous corollary were always appended: "He smiteth alike with cancer the harlot and the virtuous housewife, and sendeth His leprosy equally upon the robber and the honest husbandman whom he robbeth". Both of these common and terrible afflictions are indisputably unmitigated evils, with whose ordinary incidence no sin can rationally be associated. Their causes are quite unknown, though vaguely spoken of as Microbes, by Metschnikoff and other disciples of Pasteur. The same may be said of two other, and still more common, painful putrefactive diseases: Tubercle and Dental Decay. Tertullian, in his *Contra Marcionem* (II., 17), falsely charges Marcion with erasing this text from Luke's Gospel: which never contained it: in order to disparage the "Catholic goodness" of Jehovah. It may have been borrowed from Seneca, and inserted in the Gospel of Matthew by some opponent of Marcion, who did not understand Seneca's irony; just as the Johannine Comma was interpolated in the First Epistle of

[43] Compare the similar earlier sentence of Seneca († 65 A.D.): *De Beneficiis*, IV., 26: "Si deos imitaris, da et ingratis beneficia; nam et *sceleratis sol oritur, et piratis patent maria*". The sentiment is not his own; but is unfairly put into the mouth of an Epicurean adversary, whose "Gods" were avowedly Indifferent. Seneca goes on to controvert it in chaps. 26, 27, 28; as an *interrogatio insidiosa*. It is rather Hyper-Stoic than Epicurean.

John (v. 7) by some ardent "Athanasian". It looks also like an apologetic inversion of Solomon's lament over the ineffectiveness of Providence, in *Ecclesiastes* (ix. 2): and an anticipation of Tertullian's own well-known artifice of controversial effrontery. It does not occur in the Gospel according to the Hebrews (so far as extant); nor in the works of Hermas and the Apostolic Fathers, except once in the Long (and late) Recension of the Ignatian Letters: in the greatly enlarged Epistle to the Philadelphians, under the heading, *Avoid Schismatics*. Justin Martyr indeed quoted it with regard to sunrise, but not to rainfall: in his *First Apology* (15). It appears fully however in the *Diatessaron* (IX., 14) of Justin's errant pupil, the Assyrian Gnostic Tatian, perhaps as early as A.D. 160. It was afterwards frequently quoted by Irenaeus. Otherwise the Fathers do not seem to have made much of it; if we may judge from the Aquinian *Catena Aurea*, which the English reader may consult in Mark Pattison's translation. Hilary suggested an allegoric explanation: Sun and Rain referring to Baptism with water and the Spirit: *In Matth.* IV., § 27: Migne, *P.L.*, IX., 942.

§ 15. There is indeed a fifth very common disease of the same class described in the previous section: perhaps the most loathsome (if not the most agonising) of all: which has long been regarded as not only propagated, but originated by irregular gratification of the Reproductive Impulse. It is an indisputable fact, that the infection of Syphilis can generally be traced to fornication: though never to Seduction, and very seldom to Rape or even Adultery. But its ultimate genesis we must admit to be still really unknown. And a full and candid examination of the relevant facts, in the light of Divine Justice, will not support the theory of celestial punitive interposition. Even a Just Human Judge would rather allow two guilty to escape, than one innocent to be involved in their misery, and stamped with their disgrace. But on the average, for every loose man who suffers from Venereal Disease, far more than one innocent wife or baby is poisoned with Death-in-Life. Half of the female patients in Lock Hospitals are helpless creatures of distinctly feeble intellect: says Dr. A. F. Tredgold in the *Times* of 10th May, 1918. And in nine cases out of ten, the congenital defects and deformities, which make Life a Curse, are the causal consequences of such contagion, through hereditary infection. A leading article in the *Times* of 23rd September (1919) has neatly summed up the case against the Medical Monopolist, who is so eager to prevent the continued use of those

"prophylactic packets," which have done so much to save the health of the army. "It is idle to urge reasons of morality, for the simple reason that the innocent suffer with the guilty. . . . It may be taken as established that the diseases cannot be stamped out by exhortation. They can be stamped out only by building a barrier between the infected and the uninfected." Many years ago, I heard a sanguine surgeon saying that Syphilis could be stamped out in six months, by a resolute International Quarantine. But alas! there is no disease, which so easily becomes an instrument of Extortion;[44] and none, with the possible exception of Cancer, which yields a greater profit to the practitioner. Further enlightenment may be found in the *Nineteenth Century* of September 1917, January 1918, and July 1918; where Sir Bryan Donkin (Medical Adviser to the Prison Commission), and Mr. Hugh Elliot (translator of Lamarck), have made crushing exposures of the callous cant of the Molochite Mawworm whose bigotry plays into the hands of the Professional Profiteer. After all that can be said on any side, the last word of Divine Morality must remain: "No Sin can exceed the *Toleration of agony to the Innocent*, except its deliberate infliction".

§ 16. And even if the actual fornicator were the only sufferer, the penalty would not fit the different grades of this class of offences. The Universal Father is Just; and with Him, as with Aristotle (*N.E.*, V., 6): "all Justice is a matter of Proportion". But this imagined Judgment of God on Impurity never smites the Seducer, and very seldom the Adulterer; both of whom are a hundredfold more sinful than the common fornicator: not to mention the ravishing ruffian, who is tenfold more wicked than either Adulterer or Seducer. On him at least no decent man would waste his pity; or judge him in any case overpunished by castration. But the doom of chronic disease and domestic disability would be atrociously excessive, and therefore clearly unjust, for most of the actual immediate sufferers. A frequent collocation, or temporal coincidence, is a very different thing from a chain of natural causality: such as we can see between salacious excess, and some functional disorders of the nervous system, which have no morbid physical effect on anybody but the actual offender. As Delirium Tremens falls upon the

[44] See a letter signed "Fair Game," in the *Times* of 12th August, 1912 (p. 2). He was urged into a *Nursing Home* for six weeks by a Specialist. Two guineas were charged for each perfunctory visit, made thrice a week at the same time to all the patients. It was a chronic case, requiring no isolation, and receiving no surgical treatment whatever.

Drunkard; so is the debauchee withered by General Paralysis, and racked by Locomotor Ataxy. Infection and Contagion of any kind are generally inconsistent with Justice, and therefore cannot be tolerated by the Universal Father: whether he be considered creative or adoptive. They flourish, because he cannot yet root their germs out of this world. For the present, he is restricted to enlightening mankind, and inspiring his chosen agents to the necessary measures of mitigation and prophylaxis; in the hope of ultimately acquiring such control over still intractable matter, as may at last lead to the extermination of the seeds of evil. The casual and capricious prevalence of the Five Great Rotting Diseases, plainly cannot be reconciled with Justice or Fatherly Goodness. And Augustine's theory, that God permits nothing which He does not will, must therefore be execrated as making Jehovah no better than Satan. In effect he reaches Marcion's outspoken conclusion, but by a roundabout and underground passage.

§ 17. The conversion of the Friend-God of the Fourth Gospel, into the Fiend-God of the Fourth Century, was effected mainly by the great Ascetic movement which Athanasius and Jerome carried from Egypt to Rome. But it was powerfully aided by the wide permeation of Marcionite and Manichaean misconceptions of the God of Moses: even among those who regarded the names of Mani and Marcion with indignant horror. The two divergent streams of Ultra-Paulinity, having their adjacent sources in Marcion and Montănus, were ultimately united in Augustine: the former flowing through Mani, and the latter through Tertullian. "Augustine's system is in truth that of the Gnostics, the ancestors of the Manichees": said Canon Bigg in his *Christian Platonists of Alexandria* (p. 289 in first edition or 339 in second). . . . "It is Gnosticism without the consolatory belief in Conditional Immorality" (p. 290 or 340). "The vast eclecticism of Mani," as Milman calls it in his *Early Christianity* (II., 323), was Marcionite in so far as it was Christian. "The true descendants of Marcion were certainly the Manichaeans": decides Dr. F. C. Conybeare in his illuminating Introduction to the Armenian *Key of Truth* (p. 131). Augustine was Punic to the backbone; and he must always have been influenced (at least unconsciously) by the Mesopotamian beliefs, which he held for not less than nine years, before he professed (after three or four years of hesitation) to become a "Catholic" under the teaching of Ambrose.[45] Or

[45] See Beausobre: *Histoire du Manicheisme*, vol. i., p. 227 (ch. 9 of Preliminary Discourse to Part II.). On p. 231 he gives the formulas of

he may have been driven in the same direction, by the same spirit of resentful bravado, which led Tertullian[46] to glory in the "ineptitude" and "impossibility" of his dogmas. He dragged some of the worst of his Manichaean[47] notions into the new African Syncretism of man-worship and devil-worship, which he cloaked with the forms and phrases of Catholic Christianity; and he aggravated their evil in the process of adjustment. He rejected indeed Mani's over-emphatic Duality of World-Forces,[48] and the connected creation of mankind by

Abjuration required from the Manichees by Catholics. On p. 283 he says: "Les Péres n'ont pas toujours bien defendu le Vieux Testament". Secundinus, Augustine's Manichaean friend, reproached him with "Carnalis timor" and "Cupiditas honoris": A. *Contra Secundinum*, 1 and 2. His breach with the disciples of Mani indeed followed quickly on the issue of a persecuting edict (in A.D. 381), by that mighty friend of Ambrose, the ferociously orthodox Emperor Theodosius I.: *Theod. Code*, XVI., *Tit.* 5, ch. 7. And his book on the *Morals of the Manichaeans* is highly suggestive of the bluffing deserter. Its horrible charges have no support in the writings of any other "Father," except in the *Catechesis* of Cyril of Jerusalem (VI., chaps. 33 and 20): who was only a youthful retailer of partisan gossip, when he wrote *circa* 347. Archelaus makes no allusion to them, though quite ready to be openly abusive: telling Mani on one occasion that he was more like a Parasite than a Paraclete: *Acta Archelai*, 22. Paul the Persian (Christian) was more polite to the Manichaean Photeinos at Nisibis in 527: even addressing him as Friend: *Disputes of P.P.*, in Migne (P. Gr.), vol. 88, p. 555. Augustine made no attempt to justify his libels, when challenged by Fortunatus in 392: Augustin, *Contra Fortunatum*, 2. They were exactly what the vulgar Pagan used to say about every sort of Christian: "Thyestian banquets and Oedipodian promiscuity": as Eusebius has told us in Book V. (ch. 1) of his *History*. They are entirely discredited by Beausobre: Book IX., ch. 8, p. 728 ff. See also N. Lardner's *Credibility of the Gospel History*, Part II., ch. 63, §§ 1 (6) and 4 (18). Mani seems to have disbelieved the Eternity of Future Punishment: Lardner's *Works*, III., 478.

[46] Tertullian: *De Carne Christi*, 5: "Natus est Dei Filius; non pudet, quia pudendum est: Mortuus est; prorsus credibile est, quia ineptum est: et sepultus resurrexit; certum est, quia impossible". No famous phrases are more frequently misquoted: the latter two clauses being generally jumbled into one, and the word *absurdum* interpolated. He had, just before, vaunted himself as "bene impudens" and "feliciter stultus". See also his *De Baptismo*, 2; for a similar line of disputation. Compare Anselm (*Proslogion*, ch. 1): "Credo, ut intelligam". And Augustine (*Sermo*, 43, § 7): "Ut intelligas, crede".

[47] The greatest Pelagian writer, Bishop Julian of Eklanum (*circa* 420): "pointed out the traces of a Manichaean type of thinking in Augustine": Harnack, *History of Dogma*, vol. v., p. 187 (in Eng.). He indeed identified Augustinity with Manichaeism: "Sub laude baptismatis eructat Augustinus Manichaeorum sordes ac naturale peccatum": quoted by Augustine in his *Opus Imperfectum contra Julianum*, I., 9. See Harnack's Note: *H.D.*, vol. v., p. 203 (Eng. Tr.).

[48] Which however was quite consistent with Plato's later theology, in the *Laws*. See Gomperz: *Greek Thinkers*, III., 213 ff. (Book V., ch. 19). On p. 267 (ch. 21), Gomperz declares: "Without Plato there would have been no Augustine".

the great Power of Evil. But he reverted to Marcion, in making the celibacy and other privations of Mani's rare and voluntary Elect,[49] the Ideal, if not the Duty, of every Christian who had been baptised. The absolute wrongfulness of killing anything, under any set of circumstances, was one of the most conspicuous characteristics of the Manichaean Decalogue;[49] and Augustine only added a sinister intensity to its effectiveness, by restricting the scope of the veto to human beings.

§ 18. Like Mani, Augustine adopted substantially Marcion's attribution of Canaanite cruelty and caprice to the Hebrew Divinity; and for this indeed they had some excuse, in the presentation of His policy made by the Edomite or Midianite author of the Drama of Job: a policy so different from the Providence of the True God of the Old Testament, who pains only to punish.[50] "Behold the righteous shall be recompensed in the earth: much more the wicked." The author of *Job* does not once refer, even indirectly, to the law, religion, or history of Israel. The book was probably written in Arabic, and translated into Hebrew mixed with Aramaic, during the Babylonian Captivity. Canon Driver, though admitting all this, nevertheless maintains in his *Introduction to the O.T.* (p. 434, 8th edn.), that: "The entire work is manifestly a genuine product of the religion of Israel". But the Inspiration of *Job* was denied by Theodore of Mopsuestia, the great exegete of the Fourth Century, who led the Nestorians to exclude it from the *O.T.* Canon: "quod pagana sapiens hunc librum conscripsit".[51] Luther, who translated it in 1524, "declared *Job* to be an allegory": says his recent biographer, Preserved Smith (p. 268). Moses Maimonides († 1204) had favoured the same suggestion in his *Guide to the Perplexed*, Part III., chaps. 22, 23, 24. It is quite probable that Muhammad took his notion of Allah from the Book of Job; especially from the very Aramaic speeches of Elihu: though he always professed to be merely reviving the religion of Abraham, and at one time intended to make

[49] The Elect or Perfect dared not end the life of even a plant: Augustine, *Contra Faustum*, VI., 4; and *Morals of the Manichaeans*, XVII., 54, 57. They were vegetarians and abstainers from wine. There were only seven of them in Mani's own time: *Acta Archelai*, 10. See N. Lardner: *Credibility of the Gospel History*, Part II., ch. 63, 1 (5). And Harnack's *History of Dogma* (in Eng.), III., 327 (Appendix on the Manichees).

[50] *Proverbs:* xi. 31. The long chapter 28 of *Deuteronomy* may be described as a sermon on this text. See also *Deuteronomy* vii. 9.

[51] Migne: *P. Gr.*, 66, p. 697. And Harnack's *History of Dogma*, Div. II., B. I., ch. 1, p. 193 of vol. iii., in English.

Jerusalem his centre of worship. He certainly borrowed his condemnation of Suicide from the Canaanite "Christianity" of Chrysostom and Augustine. But it is qualified by the word "wantonly" in the *Koran* (IV., 33). The opposition of Hebraism to all neighbouring cults (Semitic, African, or Mongolian) is emphatically stated by Robertson Smith in his *Religion of the Semites*, especially pp. 4 and 194.

§ 19. But Augustine eluded Mani's consequent repudiation of the Old Covenant, by compounding Jehovah with Moloch into a new Supreme Deity: a Pseudo-Theos of the New Testament, whose chaotic and elastic inconsistencies were shrouded in the word-play of Stoic Pantheism, and Platonian poison-juggles of the Infinite and the Absolute. Old and New Biblical stock-phrases were ingeniously distorted, to palter in a double sense. Satan reappeared, not exactly as an angel of light, but as an over-zealous agent and instigator [52] of Caligulan caprice, on the part of the newly invented "Almighty". "Africa, not Rome, gave birth to Latin Christianity": declared Dean Milman in his classic *History* (*L.C.* vol. I., ch. i., p. 27). Under cover of Augustine's Procrustean Synthesis of Good and Evil, the cult of the Phoenician fire-fiend crept into the clothing of Christian Tradition; and Punic Neo-Molochism became for fourteen centuries the strongest factor in the religious muddles of Latin and Teutonic Christendom. Dean Inge (of St. Paul's) has lately said that: "Christianity is, and must remain, a composite creed, an amalgamation of opposite types of belief".[53] That is true

[52] Dr. A. B. Davidson on *Job* in the *Cambridge Bible for Schools*, ch. 2. Also his *Theology of the Old Testament*, IX., 3, pp. 300-306. And Driver's *Literature of the O.T.*, 412 and 432-434. For the relations of Augustine to previous and subsequent Christianity, see Dr. Allin's very outspoken and clarifying *Augustinian Revolution*, prefaced by Chancellor Lias. For light on his character, see also Miss Wedgwood's *Moral Ideal*, 413 to 448; and Paulsen's *System of Ethics*, I., ch. 2, § 3, p. 69, in Eng. Tr.

[53] W. R. Inge: *The Parting of the Roads*, 4. *Ibid.*, 11: "A vast quantity of crude Pagan superstition was incorporated in Catholicism". See also Gwatkin's *Early Church History*, II., 140 and 355. And Cumont's *Mysteries of Mithra*, pp. 191-196. Sunday became the Lord's Day in place of the Sabbath, and Mithra's anniversary in midwinter was celebrated instead of the real autumnal birthday of Jesus Christ. The current traditional symbolic use of the Cross was undoubtedly a compromise with the soldiers of the Sun-God. For, the Early Christians naturally abhorred the upright penal *Crux* (Greek *Stauros*), as the instrument of their founder's ignominious agony. "Cruces etiam nec colimus, nec optamus": wrote Minucius Felix, in ch. 29 of his *Octavius* (*circa* 170). We hear of no Crucifix before the Fifth Century. Their baptismal sign was merely the first letter of *Christos* in Greek: the St. Andrew's (or decussate) cross, which was certainly not set up on Calvary. The tolerant and eclectic Constantine, who abolished crucifixion, was a Mithraite bred in

of the Present, and most of the Past: but not, let us hope, of the Future. I repel the necessity of his "must remain". The True Primitive Christian was the True Hebrew, who had crowned the Faith of Abraham and the Law of Moses with the Messiahship of the Galilean Christ. The main accretions to this Nazarene Jehovism have been Mithra-worship, Man-worship, and Moloch-worship. If we cannot get back to the reign of Tiberius, let us at least get rid of everything Punic, and most things Pelusiote or Pessinuntian. "The Church," says Harnack (*H.D.*, III., 139), "has produced two fundamental systems; Origen's and Augustine's." Let us begin by rejecting the Carthaginian Latin, while we stand by the Palestinian Greek.

§ 20. The Reformers (except Luther) altered rather the outward expression, than the inner spirit of the self-torturing sycophant; grovelling before Moloch-Jahve,[54] the Augustinian monster. The religion of Calvin and Cartwright and Candlish, of the Synod of Dort and the Westminster Assembly, was a Cultus of Terror; not less than the religion of Anselm and Aquinas, of the Inquisitors of Spain and the Self-Tormentors of Port Royal. Jonathan Edwards,[55] and the "Evangelical"

frontier camps, and was baptised only on his deathbed. But Theodosius was a morose Punic-Iberian, who burned his officers alive for inconvenient errors of judgment, or even for too faithfully recording decisions which he afterwards wished to disavow. See Strachan Davidson's *Problems of Roman Criminal Law*, II., 184-185.

[54] Tertullian (*De Fuga*, 1 and 10) introduced the theory that Persecution of the Righteous came from God: "Ergo et malum a Deo, et delictum a Deo: nihil jam in diabolo, nihil etiam in nobis ipsis". But Cyprian, Dionysius, and Athanasius (*De Fuga*, 23) defended the primitive view, that it came from the Devil: though Athanasius was deeply infected with the Egyptian virus of self-mortification. See also Plutarch: *On the Decadence of the Oracles*, 14, 15, 21. Tertullian's theory was less inconvenient for Augustine, as the Father of Pious Persecution: "Grand Patriarch of Christian Persecutors": in the well-deserved words of Barbeyrac (*La Morale des Peres*, XVI., p. 304). Dollinger, in his *Religious Freedom* (p. 233 of his *Hist. and Lit. Addresses* in Eng.), spoke with just severity of Augustine's "Palpable sophisms, and gross perversions of the utterances of Christ and the Apostles": when writing against the Donatists, whose persecution he not only justified but instigated: *Contra Petilianum*, II. and III.; and *Epist.* 93 (*Ad Vincentium*) and 185 (*Ad Bonifacium*). Milman in his *Latin Christianity* (ch. 2, p. 121 of vol. i.), scathingly denounced Augustine's "Fatal Axiom, . . . which impiously arrayed cruelty in the garb of Christian charity, that they were persecuted in compassion to their souls".

[55] "God holds sinners in His hands over the mouth of hell, as so many spiders. . . . He not only hates them, but holds them in the utmost contempt, and He will trample them beneath His feet with inexpressible fierceness": *Works* of Edwardes, VII., 499: quoted in Alger's *Future Punishment*, 535. Jeremy Taylor adds to a similar outburst, in his *State of Man*, ch. vi.: "Neither shall unsavoury smells be wanting. . . .

opponents of Sir James Simpson, understood Jehovah no better than Dante, and Peter Damian, and Cardinal Newman.[56] The Punic grimness of Augustinity was indeed revived in its pristine rigour by Protestant rejection of the mitigating Mariolatry of the Middle Ages: the bond between Christianity and Gothic Chivalry.[57] The saving salt of the Reformation was the revival of the old Hebrew Religion of Family-Righteousness: which had nearly been choked out of the dominant Catholic Church, constituted in A.D. 381 by the Edict of Theodosius I., immediately following the First Council of Constantinople. Ascetic Self-denial had in practice aided the foes of purity to undermine the Seventh Commandment;[58] just as it now aids the enemies of honesty in sapping the Eighth and Tenth.[59] For, the

The bodies of the damned shall cast forth a most horrible stink." Was this a reminiscence of Herakleitus? See Fr. 113, of Bywater's *Reliquiae* of H.

[56] See Newman's horrible *Sermon on Neglected Warnings* (1849). Also his *Parochial Sermons* (1842) in vols iv. (6) and v. (18).

[57] "Catholicism with . . . its worship of Isis, renamed as the Virgin Mary": Dean Inge's introduction to *The Parting of the Roads*, p. 9. See Petrie's *Israel and Egypt*, X.: Samuel Sharpe's *Egyptian Mythology and Egyptian Christianity*: and Scott-Moncrieff's *Paganism and Christianity in Egypt*. Isis in the West: but Artemis, and Kubele in the East. For the Ephesian confluence of the Venerations of the Asian *Magna Mater*, the Ionian Artemis, and the Virgin Mary whom St. John brought with him from Calvary; see Ramsay's *Pauline and Other Studies*, V. and VI.; and his *Letters to the Seven Churches*, XVII., 217 ff. "The establishment of the Cult of the Virgin Mother of God at Ephesus is a critical epoch-making date in the development of Byzantine government and religion. . . . Ephesus, which had long been the champion of a purer faith, and the touchstone of error, as both John and Ignatius emphatically declare, was now made the stronghold of an Anatolian development, a recrudescence of the old religion of the Divine Mother": *P. and O.S.*, p. 140. Compare *L.S.C.*, pp. 239-242

[58] "The tendency of such self-conscious efforts to crush the appetites is simply to concentrate attention upon them": Dean Rashdall's *Theory of Good and Evil*, II., 71. "Asceticism is even more the offspring of impurity than the reaction from it": Gwatkin's *Early Church History*, I., 242. Marcion, Augustine, and De Rancé (the founder of the Trappists) are conspicuous instances. Marcion even refused Baptism and Communion to any man or woman living in wedlock!

[59] "The notion, that wickedness ought somehow to be balanced by pain, seems to me wholly without foundation": Rev. W. Temple: *The Faith and Modern Thought* (1910), p. 140. Canon Peter Green, speaking to the Manchester Police-Court Mission in July, 1912, declared himself a *Philosophical Anarchist*. "To meet sin with punishment," he said, "is not in the least in agreement with the religion we profess." And: "Our whole judicial system is clean contrary to the first elements of Christianity". These are noteworthy recent manifestos of the modern democratic "Christianity without the Commandments": so closely allied with the Oxonian Philosophy of Collective Theft, founded by T. H.

"Progress of Democracy," or "March of Modern Civilisation," is little more than a relapse from Jehovah's Family-Morality into Satan's Herd-Morality: a reversion from the ever-growing ideals of the Aryan (and Higher Semitic) patriarchal family, with its own exclusive homestead and chattels under its own Cohen or Paterfamilias; to the stagnant uniform instincts of the matrilineal Mediterranean herd of Aboriginal Communards. Over most of our globe the savages are already in the saddle; and the "Neolithic" *Nouvelles couches sociales* are stamping down the higher man to their own sordid and slimy level.

§ 21. From the time of Rousseau,[60] whose flattery of "The People" gave legs to the poisonous Divine Right of Majorities invented by the arbitrary Hobbes, Devil-worship has waned before the mushroom-growth of Man-worship; which indeed has more or less tainted every form of Christianity, ever since Antinomian Carpocratic Gnosticism was grafted on the ancient bitter root of Ebionite Envy. But there are Moloch-worshippers enough even in the Twentieth Century. The dark places of "Scientific" Curiosity are fuller than ever of the habitations of horrid cruelty. And the Anglican Episcopal Patrons of the fraud-faced "Research Defence" Society, differ from the Puritan denouncers of Chloroform in Childbirth; mainly in being man-worshippers first, and fiend-worshippers afterwards. The last learned recruit of Anglican Monkery preached not long ago at Cambridge: "Christ

Green and D. G. Ritchie. See especially Green's *Political Obligation* (§ 214); and Ritchie's *Natural Rights* (V., pp. 101 ff.): "The person with rights and duties is the product of a society". Also D. G. R. on *State Interference*, in the *International Journal of Ethics*, vol. ii., p. 115 (Oct., 1891): "the Person with his Rights" is the "product of the State". Ritchie seems incapable of distinguishing Legal and Moral Rights; and Green was an even more hopeless muddler. Some of their disciples do not scruple to excuse, even thieving by individuals of the classes to which they confine their sympathies. William James has derided the "paroxysmal unintelligibilities" of Green's *Prolegomena*, in his own lucid and candid *Psychology* (I., ch. 10, p. 368). And in ch. 17 (p. 11 of vol. ii.) he complains of the difficulty of understanding: "what this strenuously feeble writer means by Relation". Compare Henry Sidgwick's searchlight on *The Ethics of Green, Spencer, and Martineau*, Lecture V. Green's Oxford contemporary, the penetrating scholar Mark Pattison, has described him as a "puzzleheaded" philosopher: *Memoirs of M. P.*, ch. v., p. 167.

[60] Rousseau: *Contrat Social*, IV., 2. Hobbes: *Leviathan*, II., ch. 18, § 3. Previously suggested by Grotius, in his *De Jure Belli et Pacis*, II., ch. 5, § 17; and perhaps by Marsilius of Padua (1324), in his *Defensor Pacis*, I., ch. 17. Marsilius, however, uses the word *valentior* (*pars*), not *major*; and may be thinking of Force generally, rather than mere Number. Of all forms of "brute force," none is more brutish, none more crudely and crassly material, than the bare force of brute numbers.

summons you to a world of wonder and joy, but also of anguish and agony".[61] Yet the Master, whom he professed, said to His earliest Disciples: "My yoke is easy and My burden is light". And the late Cardinal Vaughan not only flogged himself every Wednesday and Friday; but: "For years he wore on the left arm an iron bracelet, with spikes on the inside which were pressed into the flesh".[62] What sort of God could he have been thinking of? Clearly not the God of the Prophet Hosea: who "desired lovingkindness and not sacrifice". Nor the God of the Prophet Micah; who required naught of man: "but to do justly, and to live kindly, and to walk humbly with thy God".[63]

§ 22. Death is but a churchyard goblin.[64] Life is but a flimsy curricle; deriving all its value from the freight it carries, and becoming itself an evil whenever its freight is evil. Death is the crowning mercy of a life, whose earthly purposes have ended. Life is to be valued only as the framework of happiness and usefulness. It is "sacred"; only so far as likely to contribute materially to the harmonious de-

[61] J. N. Figgis (*C.R.*): *The Gospel and Human Needs* (Hulsean Lectures, 1908-9), p. 153 (Appendix). The premature death (in 1919) of Lord Acton's posthumous editor, was a very great loss to students of the Middle Ages, the Revival of Learning, and the Reformation.

[62] J. S. Cox: *Life of Cardinal Vaughan*, II., 450. The Cardinal even believed in Exorcism; according to Joseph MacCabe: *Twelve Years in a Monastery*, p. 79. Dr. Pusey in his decadence, not only used a "Discipline" (or Kitten of Nine Tails?) on himself, but prescribed it for Anglican Sisters of Mercy! See his *Manual for Confessors* (1878), p. 243. The Neo-Catholic Democrat Littledale had by that time become the real leader of the Oxford Movement: which was originally Anti-Democratic. The *Discipline* is a Punic heirloom from Pessinus, differing from the old Corybantic scourge, in having additional tails. The Phrygian Super-Paulinity known as Montanism arose at Pepuza, in the homeland of Vergil's "*Berecynthia mater*"; and through Tertullian captured Carthage and Petrine Rome. The Gentile Mission had begun at Pisidian Antioch, a market-town for the rich domain of the Great Mother of Anatolia: as Sir William Ramsay tells us in his *Cities of St. Paul*, 253, 294. The Montanist Tertullian handed on the Pauline Fakir-Fancies through Cyprian to Augustine; and Harnack has even described him as the Founder of Western (Pauline) Christianity: *History of Dogma*, vol. v., 12, 16; and vol. vi., 22.

[63] *Hosea* vi. 6. *Micah* vi. 8. See Robertson Smith's *Prophets of Israel*, 160, 372. On p. 160, he translates Hosea's word *hesed* (A.V. Mercy), as "dutiful love" showing itself in "acts of kindliness".

[64] A mask to frighten children: Epictetus: *Discourses*, II., 1. Compare Socrates in Plato's *Phaedo*, 24. "There is no passion in the mind of man so weak, but it mates and masters the fear of Death": said Bacon, in his *Essays* (II.). He said also in the same: "Death is as natural as Birth": besides being inevitable sooner or later. See likewise Metschnikoff on the Instinct of Death, in his *Nature of Man*, pp. 125 and 281.

velopment of the world,[65] in accordance with the divine purposes gradually unfolded to us by Science, and the right understanding of Scripture. And otherwise it is worthy of protection, only in so far as it is happy and harmless. Down with that impious and poisonous imposture, the Sanctity of Human Life! And let us exalt the keystone of world-wide solid blessedness, the Sanctity of Harmless Happiness in every sensitive creature! That is the Grand Transvaluation, which must prelude the Scientific Morality of the Future: and will be the next turning point in the history of Biblical Religion. Only one higher generality can we ever formulate: the Divine Purpose of Perfecting the World:[66] which is our universal standard of good, and the Chief End of everything that has life. Here is the prime postulate of the Practical Reason, which must limit every line of action! *Hic est cardo rerum; hic omnia vertuntur!*[67]

[65] This was apparently the idea in Hooker's mind, when he penned his famous Rhapsody on Law: "Her seat is the bosom of God: her voice the harmony of the world": *Ecclesiastical Polity*, I., ch. 16 (18).

[66] Compare Henry Sidgwick's formula, in his *Practical Ethics*, ch. iii. (on Public Morality, in 1897), p. 63: "The well-being of the whole universe of living things".

[67] Adapted from Lactantius: *Divine Institutes*, II. (De Origine Erroris), *cap.* 9 (De Providentia).

IV.—PHENOMENAL SYMBOLISM IN ART.

By P. J. Hughesdon.

Phenomena may appeal to us either as significant or merely as indicative. They are merely indicative when our knowledge relating to them is empirical in character, for instance, when it is known from simple observation that if certain seeds are buried in the soil, certain plants will spring up therefrom. They must also be considered merely indicative in so far as any further knowledge we possess is ignored for the time. Significance of phenomena, depending on knowledge of the conditions or processes involved, is of one of two kinds according as phenomena are regarded as explicable or as expressive, as effects of inferred and calculated processes or as symbols of a content read in them intuitively or at least not reasoned out, consciously or unconsciously. The former is the point of view of science, the latter that of fine art and of practical insight and skill. A further notable difference is that the symbolical interpretation of phenomena is concerned very largely with qualities of life and mind of which there is immediate experience in consciousness, the causal or scientific interpretation on the other hand is concerned with truths of physics, chemistry and biology (in its lower ranges) of which there is no conscious experience. And from this it results that while in the former there are two independent lines of interpretation, the contemplative or æsthetic and the practical —thus the expressiveness of look, tone, gesture may be interpreted from the point of view either of art or of practical life —in the latter, where knowledge is mainly the result of theory-guided or of merely groping experiment, practical skill and insight are for the most part quite subordinate to theory, in other words they consist of applied science. It is true that there are, for instance, mainly practical architects and engineers, but in judging the character of the material they have to deal with they depend largely upon intuitive and symbolical interpretation quickened and developed through experience and so far their work is more nearly related to fine art than to science—this would explain the insight into constructive

problems shown so often in the history of architecture by men who were primarily artists; further, there are no corresponding sciences in the strictest sense of the term, since architecture and engineering regarded as sciences are concerned with phenomena—thrusts, resisting power of material, etc.—as calculable rather than as explicable. It is true again that the higher sciences deal with phenomena, but they do so only remotely; understanding phenomena in the strict sense, that is as meaning "manifestations to sense," we cannot speak of, for instance, sociology as explaining social phenomena in the same way as we speak of optics as explaining phenomena of vision; in other words, we regard sociology as explaining primarily not the phenomenal facts of civilisation, but rather the underlying or implied states and qualities of consciousness (and of sub-consciousness). And it is because the matter of the higher sciences belongs to the class of facts of which we have immediate practical knowledge that there can be practical reasoning in social affairs for instance quite independent of theoretical sociology, just as there are independent practical and æsthetical arts—we might take our instance from the corresponding sphere, namely, sociological art. But here we touch upon a question considered at length in a previous paper,[1] namely, the relation between scientific and æsthetic and between speculative or contemplative and practical knowledge.

It is with the expressive or symbolical significance of phenomena that we are concerned here and we must therefore go on now to consider briefly, first, what it is that phenomena express, secondly, whether this expressiveness is essential or associative, read out of or into them, thirdly, what is the difference in this expressiveness according as it is regarded from the æsthetic or from the practical point of view.

In the writer's opinion that which phenomena express is the nature (either relatively or absolutely regarded) of reality[2] and they express it through the concrete ideas that they call up in the mind. These ideas are partly our own and partly they come from others. So far as such ideas are our own, phenomena are not the sole medium through which they are obtained; in addition there are states of consciousness, not interpreted as directly expressive of anything external to consciousness; these also supply the main key for the interpretation of such phenomena as are expressive of states of

[1] MIND, vol. xxvii., N.S., No. 105.

[2] In the present paper "reality" stands for the sensible world and its implications considered as realised truth, "actuality" for whatever can be regarded as actualised fact.

consciousness in others. So far as ideas come from others, they do so first through phenomena that are either in some sense imitatively expressive (as primarily in works of fine art) or functionally expressive or operative (as primarily in contrivances of practical art), secondly through reminiscent phantasms and ideas, revived, in new contents and combinations, chiefly by means of conventionally significant phenomena, verbal signs for instance. It should be observed at the same time that reminiscent phantasms may either be expressive of ideas, that is may stand to them in a causal relation, as in a piece of vivid description, or may be called up by them through association, that is may stand to them in a relation of effect. In the latter case they may facilitate the flow of thought but are not actively expressive.

Next as to the character, whether essential or associative, of phenomenal expressiveness. To the writer it seems that this expressiveness may be in great part essential and interpreted intuitively.[1] At the same time such interpretation is largely guided by each one's immediate knowledge of his own life and mind and further is progressive in character, being strengthened, enlarged and corrected through experience, internal and external. Association too is at least helpful upon the whole because most of that part of reality which a particular phenomenon habitually accompanies is that which it expresses directly or at the least something with which it is connected by intimate and essential links. Association however may be to some extent misleading and confusing; it may for instance cause a really unexpressive sound to appear full of expressiveness. Next, the degree in which phenomena (and reminiscent phantasms) are essentially expressive is very variable. Partly it depends upon the sense appealed to, being greatest in cases of sight and hearing, considerable in those of touch, pressure, and especially effort, inconsiderable with smell, also with taste, if indeed these last have any expressive power at all apart from association. Partly also it depends upon the content, varying in more or less direct ratio with the quality of the reality symbolised; thus, to take the feeling senses, tactual pressure may be very fully expressive of the quality of consciousness which prompts it, but a toothache is hardly, if at all, expressive of the condition of vital decay to which our reasoning capacity may trace it. It is possible that only phenomena symbolical of living

[1] The question obviously is to a considerable extent biological. Thus any admission of the formerly highly favoured view that expression is often the incipient form of once useful action would in some cases at least exclude the theory of essential appropriateness.

content and, as the last instance suggests, not all even of those are essentially expressive.

There should further be clear recognition of the distinction between the nature of phenomenal interpretation and that of æsthetic or of practical knowledge. In such knowledge the essential thing is the truth, the reality expressed, not the expressing phenomenon, the content not the form. Hence even if the relation in the mind between form and content should in all cases be merely one of association, it would not follow in the least that the knowledge itself, that is the sense of the relation between elements in the content, was founded on association alone. The point too may be emphasised here that phenomenal expressiveness, the expressiveness for instance by which a particular quality of build or of colour indicates vigorous life or a particular glance or tone indicates displeasure is always in some sense typical, that is symbolical, rather than direct in character. By what manner of appropriateness, if the relation is really essential, the type is related to that typified and how it conveys meaning to us are problems that perhaps transcend the human power of analysis. It may however be said briefly that the correspondence is between the physiological character of the sensation and the psychical or the vital or even perhaps the merely structural character of that which the sensation expresses. It should be observed further that the use of terms like "type" and "symbol" as describing the relation of form or medium to content differs somewhat from their ordinary use as describing the relation of some one aspect or feature of reality to another.

We may now proceed to a more particular consideration of phenomenal symbolism in nature viewed æsthetically and in fine art with reference to the varieties of such symbolism and their respective significance and importance. The data with which we are concerned may be regarded either as phenomena of shape, colour, sound, etc., or more subjectively as sensations of sight, hearing, etc. In some references one aspect is more suitable, in some the other, and though unfortunately the respective lines of division do not correspond perfectly, it will be better to use a dual than a uniform mode of description.

Forms[1] or visual appearances (shapes and colours or, more decidedly, colour-tones), the most important practically and perhaps æsthetically of phenomenal manifestations, are, as

[1] The term is often used with a narrower meaning as excluding colour and often with a wider as the correlative of content. The former use, it is believed, has here been avoided.

appealing to the sight, expressive in what is living either of psychical or, as in the case of non-conscious life, of merely vital content. They are also expressive through the sight of physical (non-vital) content but to a much smaller extent and in the main only indirectly, being expressive of it as first appealing to the feeling senses, mainly to touch, pressure, strain —this qualification holds also very largely as regards vital and psychical content, since expression, attitude, movement are in part interpreted reminiscently and sympathetically and of course as a rule unconsciously as due to muscular tension or relaxation and are only indirectly referred to states of body or of mind; they are further expressive in the same way of function-content, psychophysical in living features, as, conspicuously, a hand or a claw, purely physical in many manufactured implements, as a spade or a trumpet. Sensations of touch and pressure are expressive chiefly of physical or of vital content, but also of psychical content indirectly, that is through associated muscular reminiscence, as in the passive sensation of a kiss or a handshake. Muscular sensations, when due to our own vital or psychical states, as in clenching or grasping, do not express those states to us, though they may be otherwise expressive; but muscular reminiscences wakened for instance sympathetically by another's look or voice, or movements are vitally or psychically expressive of such.[1] Vocal sounds are expressive chiefly of psychical content, their appeal being in part directly to the hearing, in part through muscular reminiscence, primarily in the vocal organs; expressive reminiscence of the kind is mainly of voice-movement (pitch, rate, etc.) and only quite subordinately of the articulation of speech. Other sounds are expressive of physical content—thus they are described as "hollow," "muffled," etc.—but mainly as that is first interpreted through touch and pressure; yet many may be vitally or psychically expressive through the medium of muscular reminiscence, as in a firm or a faltering footstep. Of musical tone as of artistic form it will be best to speak later. It should be noted that expressivenesses of different kinds may also combine in a single complex expression. Thus the human form as a whole, especially the human countenance, is, as expressive of mind and soul, probably more deeply expressive than any other natural form, but features in that form express at the same time merely the qualities of living tissue. Obviously too the actual connexion between phenomenon and content

[1] The view that all phenomenal expressiveness really consists in muscular reminiscence might perhaps be plausibly argued but could not, in the writer's opinion, be satisfactorily maintained.

is less close where the latter is higher in grade. Phenomena may also carry an indirect or secondary expressiveness, one expressive through analogy of an alien content, frequently of some quality or abstracted idea without independent phenomenal expression in nature, and upon this truth all type, metaphor, allegory, are founded. The capacity for such expressiveness would seem to be greatest, relatively at least, in the inanimate parts of nature. Thus the sunshine is suggestive of joyousness, of triumph, of luminous insight; broadbosomed hills are suggestive of enduring repose, of attained and final peace; rolling thunder appears to strike a note of wrathful warning or menace; the noise of wind and wave recalls human lamentation, and so forth; on the other hand, a view of sea or woodland in storm, while reminiscent perhaps of human fury, has also expressiveness of the primary kind, creating through the feeling senses an idea of elemental force. In addition to actual forms and sounds, natural or contrived, there are reminiscences of these, either exact or imaginative, existing only to the internal senses, pure phantasms, having a like expressiveness to that of their originals, less vivid but more plastic and symbolising often a greater depth and range of conceptual thought.

Æsthetic expressiveness, phenomenal and phantasmic, may also be considered on the basis of another distinction, that between natural and artistic expressiveness. Natural expressiveness is the expressiveness, either actually perceived or reminiscent, of natural formation or, in contrived forms, buildings for instance, of mere natural cohesion. Contrived forms, a bridge for instance, have also quasi-natural, that is functional, expressiveness; to engineers a bridge may also have a certain æsthetic interest as expressive of engineering thought, of solved engineering problems. Artistic expressiveness is either imitative or reminiscent expressiveness of phenomenon or purely of phantasm; this expressiveness usually is and, where it is purely artistic, must be in some degree selective and critical, gathering up and presenting in concentrated and quintessential condition the expressiveness of natural phenomena—regarded however as expressive of mind, the mind namely of the artist, all artistic expressiveness must be classed as natural. In art there is a considerable loss of natural poignancy, which is abundantly compensated in the interpretation and appraisement or, if one may use the term, in the mentalisation of reality. Further, art is expressive not only of the content of actuality regarded as a complex of perceived qualities but also, more explicitly than actuality, of the essential nature and the implications of that content, in

other words of the absolute character and significance of all that lies behind the phenomenal world. It should be noted at the same time as regards artistic expressiveness that only the place in art of phantasms, phenomenal or reminiscent, that is of sensible media, is now under consideration and that in the linguistic or literary arts, at least the content is not expressed in its entirety through the sensible media; the point will be referred to again later. Next, artistic expressiveness is very largely of that secondary kind noted above in which a natural form serves for the expression (metaphorical, allegorical, etc.) of an alien content. There is also another kind of secondary expressiveness in art, that in which forms or sounds suggested, for the most part unconsciously, by natural forms or sounds (chiefly vocal sounds) and analogically modelled on them are devised to express contents that are without adequate natural medium; the point, which has much importance in relation to the grouping of the arts, will be returned to later. A further difference between the æsthetics of art and of nature, arising out of the fact that art is purely æsthetic, is that we expect the one to be characterised by formal qualities met with only imperfectly and intermittently in the other. These formal qualities consist in the congruity by likeness or contrast of simultaneous or successive impressions. They have both a physiological and a psychological side or, to put it another way, they may be qualities either of phenomenal form or of content. Thus the muscular or other sensations experienced in the contemplation of a particular line or colour are a preparation for the continuation of or for certain variations from the same, and such concordant continuations or variations induce an easy and pleasant and consequently a receptive and appreciative state of mind. Similarly, as regards formal qualities of content, any given thought tends to induce a state of mind exceptionally receptive of certain thoughts, which according to circumstances are similar or contrasted thoughts, and exceptionally unreceptive of others. Formal excellence in art then, while distinct from, exists for the sake of, the essential excellence of art, to which it contributes by such a disposition of the parts as will make the most favourable total appeal to the mind's appreciative capacities. Hence too, what in itself is formally defective, harsh or abrupt for instance, may be capable of justification as subserving the æsthetic effect. Further, the relations upon which formal excellence depends are exclusively external relations of juxtaposition and succession. It should be noted

at the same time that to distinguish formal from expressive and especially from suggestively or indirectly expressive qualities is often extremely difficult. To take a definite instance, the agreeableness of the "golden section" rectangle is attributed to a just combination of unity and variety; based however on either of its narrower sides, it would certainly not present so pleasing an appearance, which seems to indicate that its strong suggestion of stability counts for something, just as the square, monotonous in form, is pleasing as figuratively suggestive of qualities of strength, rightness, trustworthiness—compare phrases like "fair and square" and so forth. In the same way various outwardly formal qualities are interpreted by Ruskin as essentially typical of Divine attributes. Frequently, it may further be remarked, this pervasive suggestiveness is as difficult to discriminate from reminiscences of natural expressiveness; as an example may be mentioned the impression of ideal quality and lofty aspiration derived from a predominance of vertical and upward lines in architecture, an impression partly due to the same suggestiveness as has given important secondary connotation to words like *upright*, *rise*, *high*, *lofty* and their contraries (this being derived from sources of very different kinds, chiefly perhaps from muscular effort in the eye and, reminiscently, in the whole frame), while partly it is due to reminiscences of plant-formation.[1]

From the differences between natural and artistic expressiveness or symbolism we may go on to a consideration of the latter alone. Here we will be concerned largely with a distinction already indicated when it was stated that in addition to expressiveness founded upon a direct imitation of phenomenal symbolism there was in art expressiveness of a somewhat different kind in which forms or sounds merely suggested, for the most part unconsciously, by natural forms or sounds—the latter chiefly vocal—and analogically modelled on them are used to express contents having no adequate natural phenomenal expression. This modelling process has a twofold character, consisting in an amplification and a regularisation of characteristic features of the natural medium, which together result in a very great enrichment of expressive power. In the distinction the nature of the principal arts and their relation to one another to a great extent is rooted. Analogical imitation or, to use a more satisfactory expression,

[1] The above account of the nature of artistic form is, in the writer's revised opinion, inadequate; but it cannot now be altered.

analogical representation [1] is, in the writer's view, the essential principle of the sensible form in architecture and music and also a part-principle in painting and poetry. It will be best, however, to begin with the principle of direct representation. That sculpture and in the main painting are directly representative in medium and what it is they represent are sufficiently obvious matters. The arts of language are also directly representative, æsthetic prose as a rule entirely so, poetry in part. As regards the chief sensible medium of both, namely, expressive sound, it seems to the writer that this represents the speaking voice, that no piece of prose or poetry can be entirely effective in which the language fails to give full scope and opportunity to such a vocal movement —stresses, pauses, modulation of tone, etc.—as is most appropriate to the thought, and that in this the expressiveness, as distinct from the formal excellence, of the movement of prose and of poetry consists.[2] Next as regards the indirectly

[1] Perhaps no single word will express adequately the attitude of the artist to actuality. The term "imitation" is, however, generally unsatisfactory. Not only does it fail entirely as regards the creative and critical spirit in art, but it is never really the most suitable term. Thus it seems more satisfactory to say of a painter that he is representing than that he is imitating a landscape; again, in the case of a poet embodying in language his own mood, while there are elements of fitness in both the terms "representation" and "expression," to describe his work as "imitation" seems quite inapt. Indeed it is perhaps to effects of a *tour-de-force* quality that the last term applies most suitably. At the same time the function of the artist is not so much to represent as to re-present (within limits to remould) and this holds not only of fact but also of essential truth and in larger measure the higher the quality of truth dealt with. For the artist as such it is always necessary to depart less or more from the letter of reality in order the better to present its spirit; consequently the actual appears in art to a considerable extent not only as it is not but as it could not be. One of the most palpable illustrations of this is supplied by what is possibly the finest vehicle of art, the dramatic soliloquy, since men do not usually meditate aloud, still less in formed and rounded sentences or in verse.

In the present paper the term 'representation' is generally used for the relation of art to reality, 'expression' for that of form to content.

[2] As showing how much of such expressiveness there may be even in single words the comparison may be useful of the two sentences *He is surely not there* and *He is certainly not there.* Between *sure* and *certain* there must be something like exact equivalence; but *surely* and *certainly*, the one deprecatory and apologetic, the other abrupt and overbearing in tone, are certainly far from equivalent. The difference seems traceable to differences in the vocal movement, which in the one case drags and seems to falter, in the other is brisk and unhesitating. And apart from this factor of expressive sound it seems difficult to understand how meanings are often so subtly and yet so surely differentiated. It should be observed further that if the meaning of a word is often influenced by the voice-movement in pronunciation, this voice-movement likewise is

representative arts, architecture and music, and the indirectly representative elements in painting and poetry. Architectural forms would seem to be based by suggestion and analogy mainly upon natural forms, that is upon forms of "nature" in the ordinary sense of the word; thus the resemblance, though, apart from primarily decorative features, it is never close or obvious, will reveal itself upon reflexion; good examples are the "sky-like dome" of Classical architecture and the branching and soaring pier in Gothic. In music on the other hand the analogies seem to be derived from conscious life, from the voice in essentially expressive utterance, not necessarily articulate, as in the linguistic arts, nor necessarily even human utterance. The suggestive element in the sensible forms of painting and poetry is far less broadly analogous and shows itself mainly in a certain modification of direct representation; in painting it seems to lie chiefly in tone (in the various connected meanings of the term) [1] as in the lowering of tone to gain an effect of repose; in poetry it is chiefly in the rhythm, which may be almost directly representative with very pleasing or striking effect, but as a rule is suggestively so in its most powerful appeals.[2]

To the difference between direct and analogical or suggestive expressiveness in the sensible forms or media of art there seems, in the writer's opinion, to be a parallel difference in the content. It is a difference rooted in the already noticed distinction in the data of knowledge (and, in spite of constant mutual qualification and interpretation, reflected in knowledge itself) between externally referred phenomena and states of consciousness. Where art-forms are directly representative

often influenced by the meaning. In either case words may be truly expressive in sound that are quite free from onomatopoeia, whether fairly direct, as in *splash*, *crash*, or indirect and analogical, as in *flash*, *dash*. (The onomatopoetic quality of English monosyllables in *ash* is a point worthy of notice.)

[1] The light that never was on sea or land,
The consecration and the poet's dream.

[2] Compare in the above regard the following from Shakespeare :—

(i) O that this too too solid flesh would melt,
Thaw and resolve itself into a dew !

and

(ii) Love is not love
Which alters when it alteration finds
Or bends with the remover to remove.

In the former passage the natural movement of the voice appropriate to the thought is reproduced with something approaching exactitude; in the latter it is reproduced with considerable amplification and regularisation.

of natural forms, the content primarily represents reality as revealed in phenomena, where they are analogically or suggestively so, it primarily represents states of consciousness in some measure dissociated from, if not further interpretatively and appraisingly reacting upon, such aspects of reality, that is, it primarily represents moods or tones of consciousness.[1] This view would seem to agree with the generally accepted interpretation of architecture and of music alike. In its analogical—largely unconscious—representation of natural forms architecture seeks to express not external nature but internal consciousness. Thus, to return to the examples already given, the Gothic column stands for aspiration, that spiritual aspiration which is often considered to be the pervading note in Gothic, while the dome, especially in its interior aspect, suggests the consciousness of social union in a world-wide or at least far-spreading community,[2] though characterisations of the kind are perhaps rather too explicit to describe generic frames of mind that may take widely varying specific forms. Music again in its content primarily represents the tone of thought, while the precise phase or feature of reality to which that tone is appropriate is generally, unless verbally indicated, a matter for individual application.[3] Sculpture and prose on the other hand primarily represent reality in its concrete embodiment; both these arts show us the world, often in a new light and with fresh values assigned, yet in one sense as we see it daily ourselves, that is, their representation of it is not essentially pervaded with any sense of more being meant than meets ear or eye, any impalpable spirit of brooding reflexion, any resonant suggestion of spacious mystery imperfectly resolved and of uncaptured aspects of truth. Painting and poetry would seem to a considerable extent to combine the respectively objective and subjective points of view of the other pairs of arts, that is to represent the quality or tone of consciousness as stimulated by some particular aspect of reality and expressing itself in the context of an articulate rendering of the same. Thus the painter seeks to depict not merely portions or phases of reality but the particular appeal that these make to him, in other words his

[1] Such moods should be regarded as moods of thought, though of thought at once too vaguely general and too subtly precise for satisfactory expression in articulate language.

[2] Whence perhaps its frequency in metropolitan cities.

[3] Thus in music the indirectness is simple, in architecture it is usually twofold; for in the latter the form is not only analogical in origin but allegorical (symbolical in the ordinary sense) in intention. A parallel contrast would seem to exist as regards the corresponding features of painting and poetry.

state of mind in contemplating them, and the latter or more subjective element he conveys primarily in tone and in colour-quality. Poetry again expresses both objective element and tone of thought, the latter primarily in the rhythm.[1] It is true that the above functions may to some extent be interchanged or exceeded, as when sounds recalling those of wings in flight, of mounting flames, of falling cataract, etc., are attempted in music. But such art will usually be limited in scale and partial in character, the expression somewhere between direct and analogical and the representation based on a corresponding compromise between objective and subjective aspects. Where an advance is made beyond this, where, for instance, music tries to reproduce natural sounds with something like exactness or to express movement directly, or where any one of the directly representative arts attempts analogical expression and the representation of mood alone in the spirit of architecture or music, the limits of sound art are probably soon overpassed. With regard further to the class of successful descriptive music based on the possibility of awakening phantasms of sight by means of phenomena of sound, it may be said that such music should perhaps be understood less as really objective than as expressive primarily of the mind's sympathetic response to such scenes and events; if there is at the same time a clear and sustained effort to represent rather than to suggest the external element as well, music is so far attempting, not necessarily with ill-success, the combined subjective and objective treatment characteristic of poetry.

It should be observed in respect of elements in the same art-form distinguished above that only in union are their potentialities completely realised. From good poetry in an unknown tongue well recited it would usually be easy to gather the general tone of consciousness represented; or, if the words, as read, were understood but the metrical principles unknown, the diction in its more palpable characteristics would obviously be quite intelligible. But most of what results from the union or fusion of rhythm with diction must

[1] Mill appears to have said that the prose-writer was "heard," the poet "overheard". Exactly how the terms were meant by him is not known to the writer; but some such distinction would seem to be involved in the distinction made above.

It may be questioned whether the style of painting known as "line-drawing" should not be classed with plastic rather than as an undeveloped form of graphic art. The connecting link might be found in low-relief sculpture, which approaches fairly close to representation on a flat surface. Such an arrangement would certainly improve the exactness of the above parallelism.

in either case be lost.[1] And the loss would usually be great. For on the one hand the moulding and quickening influence of poetic rhythm both enlarges the plastic character of appropriate language and energises such of its subtler implications, suggestions and associations, inherent or merely traditional, as are concordant with the theme, while on the other hand poetic diction brings out meanings in rhythm that apart from the clues thus provided would never be appreciated adequately.

This consideration of differences in the character of artistic forms has resulted in a grouping of the six principal or independent arts[2] into three pairs. The consideration of further differences will give a complementary grouping into triads, which, combined with the former grouping, will result in a symmetrical classification. This second division is the time-honoured division into arts of sight and of hearing, a division that in origin is quite naive, but where due to recognition of the sound-element in the linguistic arts as consisting primarily not in the sound of the words—this a very great extent has merely conventional significance—but in the voice-movement, it is broadly and securely based, form being the single sensible medium of architecture, sculpture and painting, sound the single sensible of music and the principle sensible medium of artistic prose and poetry. But there are other points of difference correspond-

[1] Most but not all. Apart from language there can be no such thing as rhythm, there is only the metrical pattern, which has small actual expressiveness; apart from rhythm (or its prose quasi-analogue) language is a mere medium of communication or aid to thought and memory. In the examples given, though one of the two elements is not understood, its influence in transforming metre into rhythm or language into diction is not wholly lost.

[2] The six independent arts, namely, architecture, sculpture, painting, music, artistic prose, poetry. Artistic prose, though invariably omitted, should surely have a place in any table of the arts. With regard to the distinction from non-artistic prose, it is important to notice that such a distinction is not really peculiar to this art. Artistic media are for the most part identical in origin and still largely so in fact with instruments whose purpose is not, as theirs is, the concrete expression of the nature of reality but simply the facilitation either of social intercourse and organisation or of mental processes, as reasoning and recalling. In the case of language this doubleness of function is fairly obvious, but it has hardly received adequate recognition. Thus the language—similarly also the illustrations—in strictly scientific writing is mainly a means of communication; consequently there is in such writing no indissoluble connexion between thought and its linguistic expression and the latter is an entirely secondary matter. The two functions however, distinct as they are, are by no means incompatible, indeed they are indissociable in the case of architecture, which is always largely instrumental and therefore can only rank as a partly independent art.

ing to and closely connected with the above. First, the artistic media of sound may be contrasted as phantasmic or as reminiscent or imagined with the artistic media of form as phenomenal or as actual. That is, in the former phenomenal actualisation is not indispensable; thus a musician can to a very great extent appreciate a piece of music from the score alone and the best musicians usually compose "in their heads". Prose and poetry again are more often read in silence than recited or delivered. But in the case of music appreciation of a composed work is certainly facilitated and amplified through actualisation, and the same thing holds perhaps of prose and poetry too, though to a much slighter extent.[1] The contrast between the entire and necessary phenomenalism of the arts of form and the partial and merely helpful phenomenalism of the arts of sound may partly be explained by the greater reminiscent power of the sense of hearing. But this superiority in reminiscent power is much increased through a further and closely connected difference of a fundamental kind, the difference namely that the parts of a work of art are distributed in the former art-group spatially, in the latter temporally.

Corresponding to these differences in the character of the sensible form or medium there is a difference in that of the content, primarily a difference as regards the relation to fact, actuality. Thus the architect seeks to represent in ideal form the characteristic and prevailing frame of mind proper to the function for which the building is designed;[2] the sculptor and painter reproduce forms and appearances and groupings of these, also idealising through selection, composition, emphasising of aspects. The musician, the prose-writer and the poet go rather more directly to the heart of reality, that is to essential truth, whether actualised or not; even when they compose dramatically, their most successful characters are usually in some sense the fruit of their own imaginative insight, and this holds to a yet greater extent of the actual theme, the plot, if the term is understood in its deeper sense.

The above considerations may be tabulated symmetrically as follows:—

[1] It should be observed as regards the arts of language that the essential sight-element (as to which see later in the text) does not admit of actualisation.

[2] The subjectivity in architecture is therefore in one sense more that of users than of designer; but the two characters may of course be combined.

	Arts of Form—medium spatial, necessarily phenomenal; prevailing method qualified adherence to fact (actuality).	Arts (primarily) of Sound—medium temporal, preferably phenomenal; prevailing method large independence of fact.
Medium analogically expressive, regularised; point of view subjective.	Architecture.	Music.
Medium directly expressive, unregularised; point of view objective.	Sculpture.	Prose (art.).
Medium suggestively expressive, partly regularised; point of view objective-subjective.	Painting.	Poetry.[1]

In the opinion of many to attempt a symmetrical classification is as vain in the case of art as it would be in that of science. If however what has been said above is sound a symmetrical classification does in fact follow therefrom. At the same time anything like exact symmetry is not to be looked for. The reason is that the nature and relations of the several arts depend not only upon the internal or psychological factor, but upon the external also, the available symbol-material, that is, the natural expressiveness of dead and living matter and the further expressive potentialities latent in the former—in catgut for instance. It should also be observed that the two series regarded diagrammatically are not so much parallel as convergent; thus architecture and music present a marked contrast at some points, especially in this that the one is representative almost entirely of the social, the other largely of the individual consciousness.

The above classification of the arts has no reference to their order of development. There is no doubt a certain tendency for the simpler arts to develop earlier, but a similar tendency exists also in the case of the more directly representative arts, as is evidenced in the excellent drawing of the Cave-Men—graphic art, it should be noted, at first and up to a fairly advanced stage is directly rather than suggestively representative.[2] There are, however, two other factors that probably have exercised a far more powerful influence in this matter. The first is fitness in the materials and instruments

[1] The common sensible feature answering to the similarity in indirect expression is obviously in the case of music and poetry the feature of 'song' or 'melody,' in the case of architecture (especially architectural interiors) and painting it would seem to be the feature of expressive spaciousness.

[2] See earlier note on "line-drawing".

of an æsthetic art to serve the purpose of some urgently important practical art, notably the fitness of those of architecture and of prose and poetry to serve the purpose respectively of building and of speech. The second factor is the obviousness and accessibility of materials and instruments. Here also prose and poetry have been at a great advantage, while poetry has been at an advantage as compared even with prose, since the latter is dependent not merely upon speech, but upon written speech, and even after the development of writing is more hampered than poetry through the cumbersomeness of early scripts and even through the scarcity of suitable writing instruments. It is obvious too that as regards this factor music has been the least fortunately circumstanced of the arts, which may be the principal cause of its late development. At the same time advantage at the above points has perhaps been by no means an unmixed benefit. Thus the development of language primarily as an instrument of daily usefulness or rather necessity means that language has been formed primarily for an unæsthetic purpose (dependent in part, it is true, upon semi-æsthetic means) and has only been adapted as best might be to purely æsthetic uses; its imaginative quality has probably suffered in consequence; compare in this regard words restricted to æsthetic uses, as *sere*, *billow*, *steed*, *sable*, *robe*, with their more handy but less suggestive, less mentally resonant synonyms.

It may further be remarked that where practical motives become paramount and the æsthetic side of the arts sinks into mere subservience thereto, other features appear bearing no relation to the system set forth above. Thus popular music in its practical character as entertaining or inspiring is both eminently social and at times druglike in influence, operating now as a sedative, now, in martial music for instance, as a stimulant. These characteristics are naturally prominent in early music before the art has developed sufficiently to assert its æsthetic independence and they are the characteristics especially noted by Plato and Aristotle, who had only the rudimentary Greek music before them. Hence to commend as implying exceptional discernment the importance attached by those writers, on the ground of such characteristics, to the educational potentialities of music—the point was perhaps impressed on them by the cultural and disciplinary use of music in Greece, notably at Sparta—seems to indicate a misunderstanding of their true position.

We may now go on to consider more thoroughly the part that the several sensible media play in relation to the several arts. It has already been insisted upon sufficiently that the

arts of form appeal mainly to the phenomenal vision, while the arts of sound appeal primarily to the hearing, music at least preferably to the phenomenal hearing. Prose and poetry appeal to the hearing in unregularised and in regularised voice-movement and intonation, also—poetry chiefly—in non-imitative description of sound, also in rhyme, alliteration, expressive quality of word-tone, etc., and occasionally through more or less imitative representation, direct or suggestive of non-vocal sound,[1] and they also appeal to the vision; to the hearing they appeal ordinarily, that is in silent reading, as reminiscent not as phenomenal and to the vision necessarily so, in which connexion it should be observed that in the acted drama it is the sound-element rather than the form-element that is realised phenomenally, the spectacular part of acting being concerned with what in the purely artistic drama, as distinct from the mere stage-play, are only accessories. Another point worthy of notice here regarding the arts of language is that the rhythmic sound-element is always present, the visualisation and other sense-elements on the other hand are quite intermittent; thus, while it is true that all use of language is attended with visualisation of the weaker, associative kind, yet such visualisation has at the most merely negative æsthetic quality, that is, it should not suggest decidedly unæsthetic images. In music too there is, of course, much imaginative or reminiscent visualising, but, while æsthetic in quality, it is perhaps chiefly secondary, suggested by rather than suggesting the frame of mind expressed, and so varies as widely as the individual interpretation. To the feeling senses the stronger appeal is made by the arts of form, but the appeal is to these senses almost wholly as reminiscent not as phenomenally affected. Thus there is present in the arts of form, especially in sculpture, the reminiscent "feel" (softness, weight, etc.) of the actual (in architecture) or the represented matter; it is also present occasionally and more faintly in the arts of sound. Important in the arts of form are the spatial muscular sensations (in eye and body), mainly as reminiscent, but in architecture largely actual. Sensations of effort and resistance are also wakened reminiscently in the arts of form, which are pervaded, either actually (in the case

[1] As in the second of these two lines of Tennyson :—

The moan of doves in immemorial elms
And murmuring of innumerable bees

where the representation is unusually direct. Imitative and non-imitative description of sound are strikingly combined in the same writer's lyric *The Splendour Falls*. Expressive quality of word-tone may be illustrated by the prevailing character of the terminal syllables in Milton's sonnet *On the Late Massacre in Piedmont*.

of architecture) or representatively, by the manifestation of the result or the operation of muscular activity or of natural forces.[1] Such sensations again are obviously recalled in the arts of sound, so far as these are based upon expressive voice-movement; as involved in the articulation of language, they are also utilised in the same arts; an instance is the reminiscent laborious energising of the vocal muscles, communicated thence to the locomotor muscles, resulting from the line of Pope

That like a wounded snake drags its slow length along,

or the quickening, but only partly muscular, effect of Browning's verses, *How They Brought the Good News*. Reminiscent muscular effort again, for instance the reminiscent climbing associated with architectural features like the Gothic tower[2] and column, is, as suggestively and figuratively interpreted, especially important both in architecture and in music. Lastly there is for expert artists the reminiscent feel of the material and tool in operation, as of marble and chisel, sensations of the kind being experienced in perhaps all the arts, as regards either creation or rendering.

A further important point is the relation in which in the respective arts the sensible medium stands to the conceptual content. In the first place, the part played by the medium appears to be one of relatively declining importance as we ascend in the scale of the arts; to put it another way, there is progressive immaterialisation. Such a tendency is obvious, as regards arts belonging to the same series, in the matter of bulk or volume. There is decline in the extent also to which either actuality or intensity is necessary or helpful. Thus in architecture actual substance and actual content are necessary; stonework for instance may waken reminiscences of tree-formation but it must also be expressive of its own nature and characteristic architectural qualities; a building again must both serve its purpose and express not only its purpose in a general way but also the design and structure belonging to it as building. In sculpture there is complete adoption of an alien form and effacement of all positive expression, but without positive disowning, of natural content.

[1] Reminiscences of a privative kind, namely, those arising from the representation of qualities like limpness and powerlessness, should also not be overlooked.

[2] Watching with upward eye the tall tower grow
And mount, at every step with living wiles
Instinct—to rouse the heart and lead the will
By a bright ladder to the world above.

—Wordsworth.

In painting actual solidity disappears and there remains mere superficial extension. In music there is still entire dependence on the symbol, but this, though preferably phenomenal, is not always necessarily so; the external factor too has neither extension nor continuous existence. In the arts of language the symbol is always in part at least purely phantasmic; further, as regards strictly essential elements, it can become phenomenal only in respect of sound, and even this degree of actuality is exceptional and unnecessary. To compare further the two arts, prose seems to gain more in being read aloud than does poetry, because the movement in the former has less suggestive quality and is closer to the natural movement in speech. The prose drama again probably gains more in being put on the stage; indeed, were it not for the fact that dramatists have been obliged by circumstances to keep theatrical and spectacular considerations constantly in mind, the best poetic dramas would perhaps lose more than they gain in being put on the stage; for against the increase in intensity and in realistic interpretation must be placed the obliteration of the ideal setting, the undue prominence of accessories, the obscuring of rhythmic expression where this does not coincide with a directly representative voice-movement and intonation, finally, though this of course is not inevitable, deliberate alteration for melodramatic effect, as when the closing passage of *Hamlet* is suppressed in favour of a sensational 'curtain'. There remains another very important point in connexion with the relation of æsthetic concept to symbol or sensible medium, namely, that in the case of the arts of language and only in their case the concept in its æsthetic appeal is partly independent of such medium, for the voice-movement, the single sensible element that is always present, and the other, intermittent sensible elements only supplement and amplify the meaning of the words. Yet this differentiation is perhaps rather too absolute, since the æsthetic concepts embodied in any work of art would appear to contain non-sensible elements of knowledge and reflexion not expressed but merely recalled by the sensible medium. Even then it might be objected that in the other arts the sensibly expressed element must be prior to the purely conceptual; but this perhaps is not necessarily so in the mind of the artist; or the same element may sometimes be prior in the arts of language too—thus in many short pieces and passages it may really be that the rhythmic inspiration due to the tone of mind suggests the linguistic character. In music too of course words are generally used, but, according to a widely held opinion, the medium in its perfect form

is wordless; further, where words are used, their part is mostly quite secondary, that is, they are not to any great extent directly expressive, but serve rather as clues to the expressiveness of the music; hence composer and librettist may be and usually are different persons, perhaps of very unequal artistic capacity.[1]

With the features, to one regarding the arts in serial order, of declining sensible intensity and less materialised representation is connected perhaps in part the correspondingly increasing tendency to deal with themes of unrest, sorrow and evil in all its forms. Thus in architecture such themes would seem to have no place at all, unless it be held that a prison for instance should be more than mere building and should have expressively gloomy and forbidding features. In sculpture again, as tested by the practice of the best period, themes at least mentally reposeful are greatly preferred, and to a lessening extent the same is still true of painting in its rendering whether of nature or of man, though here even scenes of calm and peace are sometimes touched with a more sombre note as of "pastoral melancholy" or "the still, sad music of humanity". When we come to music there is an appreciable rise in the proportion of attention given to pain and distress, and in the arts of language this is yet more the case and the subject of moral evil now comes definitely to the front, though the outlook upon life of the greater poets is upon the whole one of qualified optimism. To the writer it seems that one cause of this tendency is the fact that since all actual pain and evil are distressing, the further an art-medium is from actuality the more capable is it of representing pain and evil in ways that do not distress so much as to interfere with æsthetic appreciation. This account obviously fails to meet the case of the drama, where themes of the kind are frequently handled with a near approach to and indeed a semblance of actuality. A further explanation may however be found in the distinction already noted between the spatial character of the earlier and the temporal character of the later art-group, since arts of the former group are unable to compensate for showing evil temporarily ascendant by showing it ultimately vanquished or surmounted except by means of a serial presentation of the theme in its successive phases, a device that has not been used very much by artists. There is indeed one sense in which the arts nearest to actuality are in the one group sculpture (with the kindred forms of plastic art, also

[1] If the perfect form of music is wordless, this would seem to imply or at least to suggest that the perfect form of architecture, all except artistic considerations excluded, is independent of sculpture and painting.

undeveloped or imperfect forms of graphic art) and in the other group prose; for these arts are the most directly representative and are able to reproduce the most literally. Hence these are the arts best suited, at a certain loss of their purely artistic character, to serve the, as a rule, only imperfectly artistic function of the effective commemoration or communication of fact.[1]

[1] After what has been said as to the meaning of verse-rhythm, a few words may be permitted with reference to that sound-element which in modern stressed verse is its usual complement, namely rhyme. The function of rhyme would seem to be in the first place to carry the chief, namely the terminal, stress in a verse; otherwise this recurrent pause would tend, in most metres depending primarily upon stress, to give an unpleasantly jolting and halting character to the movement. The disadvantage can however be surmounted in other ways, especially as, in the case of blank verse, through the employment of the periodic sentence, where the terminal verse pause is necessarily less emphatic. Secondly, rhyme helps to idealise the utterance and to remove it from commonplace speech and so facilitates a boldly and freely plastic and suggestive use alike of rhythm and of language. It is true also that the necessity of rhyming suggests ideas. Such apparent helpfulness is however something of a snare, since there may easily be an overreadiness to accept suggestions of the kind as solving the rhyme-problem when a little more thought might give better results.

In English however rhyme is not a matter of sound only, sight-rhymes or spelling rhymes being also admitted on a considerable scale. For this the paucity of English sound-rhymes cannot in itself be held a sufficient defence. What really justifies a limited recourse to spelling-rhymes is the fact that writing, while not an essential part of the sensible medium in verse, is nowadays an indispensable accessory, indeed with really good visualisers the written symbol is never totally suppressed; consequently the effect of this symbol upon the mind must be taken into account. Whence of course it follows that, other things equal, the rhyming is to be preferred for instance of *feat* and *heat* to that of *feat* and *sleet*; but other things never are equal.

V.—DISCUSSIONS.

MR. BOSANQUET ON CROCE'S ÆSTHETIC.[1]

Croce's Æsthetic is of interest from two standpoints, closely related but really distinct. It is a theory of Art and therefore has to take into account all the problems of artistic production,—the problems of the artist, who has to choose his material and elaborate special methods, and the problems of the æsthetician, who seeks to discover the rules and standards of artistic appreciation. It is also a theory of Beauty, and Beauty is a pure concept like Truth and Goodness. As such it is a problem of philosophy and cannot be dissociated from the general principle of the philosophy of which it forms an organic part. In Croce's view, as Dr. Bosanquet begins by pointing out, "Art and Beauty are one and the same thing, and that thing is an experience of the human spirit". But in criticising this view we have to be careful to keep our criticism on the same plane and preserve an identical standpoint, otherwise we shall find ourselves in danger of alternately resolving the special problems, which have meaning only within very restricted and entirely practical spheres, by appeal to broad generalisations and then condemning the philosophical principles by arguments drawn from the limited perspective of the individual artist. It would be as though we should suppose ourselves to be advancing the science of chemistry and helping the chemist by insisting on his recognising the fact that, when stated in terms of atoms and molecules, salts and acids have no qualitative differences. In like manner we may press the philosophical identity of theory of art and theory of beauty into the denial of any qualitative difference between say painting and poetry, and then to painter and poet we shall seem to be preaching that all art is vanity.

It seems to me that Dr. Bosanquet in criticising Croce's Æsthetic is not free from reproach in this respect. Let me hasten to add, however, that this does not imply that there is, even unwittingly or unintentionally, any unfairness in his criticism. If Croce's Æsthetic strongly attracts me, and equally strongly repels Dr. Bosanquet, I have to try to discover the reason, and it does not seem difficult. Some years before the world had heard of Croce and his theory, Dr. Bosanquet wrote a *History of Æsthetic*

[1] *Proceedings of the British Academy*, vol. ix. (10th December, 1919).

which is classical. It was a pure artistic interest, that is, an interest in the great works of art, in the methods and technique of art production and also in the part which æsthetic appreciation of works of art plays in the mental life, which attracted him to the æsthetic problem. And in this he was following the high tradition of the great art critics, Ruskin in particular. But Dr. Bosanquet is also one of the leaders of the intellectualist school in logical theory and metaphysics. It is easy to see therefore how difficult it must be for him to judge æsthetic theory without the intrusion of the artist's individualist standpoint, and without the special problem of art production being of the very essence of the theory. My interest in æsthetic is quite different. I have always been interested in art criticism. One of my cherished recollections is discussing Ruskin's theories with Dr. Bosanquet in the Giotto chapel at Santa Croce in Florence (when we were both much younger), and I read the *History of Æsthetic* when it appeared in 1892. Yet until I read Croce I never felt that Æsthetic theory was an essential and necessary part of philosophy. My first introduction to it was the Heidelberg Address in 1908, but it was not till some year or two later that I read the *Estetica*. It then suddenly burst upon me that at last I had found a doctrine which made a whole philosophy consistent. For me therefore it is by his philosophical doctrine that Croce must be judged, and by the consistency of its æsthetic theory that it must stand or fall. What then is the philosophical doctrine?

Dr. Bosanquet has given in his essay an admirably concise account of Croce's general theory. He has also, it seems to me, given a very just estimate of the nature of the influence of Vico's theory in the suggestion of it. The criticism however at times puzzles me and sometimes too, I must confess, appears so obviously surface criticism as to make me wonder. In the main, however, and particularly in the Appendix, it is penetrating and effective. I will give an illustration of what I mean by surface criticism,—criticism which does not penetrate to the author's meaning. On page 8 there is a paragraph exposing what is called "a nest of contradictions". Here is one of the contradictions. "Intuitions, we are told, are things, concepts are universals or relations. Things! We can have intuitions of things, then, without concepts or categories, without the *de facto* working in our minds of the thoughts of identity, distinction, substance, whole and part." But, I ask in amazement, is it the same thing to say "intuitions are things" (meaning as I understand the phrase that intuitions are the terms which the concepts relate) and saying "we can have intuitions of things" (which to me is the direct contradictory). If you make this transformation you have indeed a complete absurdity.

I cite this particular criticism because it is just on this point that Croce's theory appears to me so illuminating. Croce denies or rejects the reality of the external world. So too do many other

idealist philosophers. I had always thought that Dr. Bosanquet himself did, and unless Hegel also did I have signally failed to understand "absolute idealism". Now the one thing which has always seemed to me to offer the insurmountable difficulty to absolute idealism is the impossibility of constructing the world out of concepts. Concepts are universals or relations: how do universals become concrete, what do relations relate? Croce is the first philosopher who has given a plain unambiguous answer to these questions, and this to me is the supreme value of his æsthetic theory. Reality is the life of the mind; it is spirit, activity, essentially present and all-inclusive. No ghost of a thing-in-itself haunts it; no otherness confronts it with a dual claim to be recognised as real. Of course this is no new idea, but how have philosophers hitherto attempted to rationalise it? By positing a mental construction of sensations, sense-data, sensibilia, —or by whatever other term they have tried to distinguish and denote the elementary constituents of experience,—concepts and categories being the cement. Croce points out that this can give no result, for the simple reason that it leaves out the first initial grade of the activity, the first step in its expression,—the creative work of the imagination. There is no knowledge in pure sensation, just as there is no perception of the pin in the pure pain of the pin-prick. Mental activity begins with the expression of the intuition in the creation of the image. This is the condition and pre-supposition of all mental life. Until the image is created there can be no perception, no intercourse, no purposive action. To perceive the sun is not to remember that I had a warmth-sensation associated with a light-sensation yesterday similar to those I experience to-day. I cannot connect my sensations with the sun, or in any way perceive the sun, unless I have formed the image. Sensations may provoke an involuntary response in reflex action, but they cannot lead to purposive action, they cannot make the voluntary muscles function, unless I create for them an image. I cannot have intercourse with another mind unless my own mind, having expressed itself in an image, can by purposive action arouse in another mind the activity of imagination. This fundamental creative activity, this first step in the mental life Croce describes as intuition-expression. It gives mind its world.

If this theory be true it seems to me impossible to exaggerate its importance. It marks a definite stage and advance in the evolution of philosophy. Looking back over the history of modern philosophy we see how continually it has been missed. The Cartesians rejected sense altogether. It belonged they said to the realm of confused and obscure ideas. It had for them a purely practical utilitarian purpose. It was an endowment meant to preserve the body from destruction, not to lead the mind to truth. The empiricists were hypnotised by the notion of a sense manifold out of which, by some marvellous magic of external association, an ordered world admitting of scientific prediction arose. The

critical realists to-day are exercised about the relation of "objectives" to "objects". The absolutists take the logical criterion of consistency as the affirmation of reality and construct therewith a transcendent individuality. The charge against all these aspects, systems, methods, which Croce urges is that in them dualism is never successfully overcome. External reality either stands over against spirit in splendid isolation and its relation to it baffles all attempts at comprehension, or else it hovers round the idealist construction like a ghost, refusing to be exorcised however illogical its claim to exist.

For Croce on the other hand, the external world is constituted by spirit in the first degree of its activity and as the initial stage. There is no knowledge until the mind finds the expression of its intuitions in the creation of images. This precedes sense perception for the simple reason that you cannot perceive anything until there is something to perceive. Perception is therefore a later stage in the activity, that in which the judgment of reality or unreality is brought to bear on the created images. This is why Croce identifies the creative imagination with the artistic activity, and so places art, and not philosophy, as the first degree, that on which all evolution of spiritual activity depends. So, following Vico, he declares poetry not prose to be the primitive form in which men found the possibility of intercourse by speech. And the essential nature of this creative imagination or artistic faculty is that it is lyrical. It works from within outwards and not *vice versa*, expresses in song what the heart yearns for.

It is this identification of the primitive, simple and universal æsthetic activity with art that Dr. Bosanquet criticises, and the main brunt of the criticism falls on the essential feature of the theory,—what for Croce has evidently been the motive of it—the overcoming of dualism. Dr. Bosanquet seems, even vehemently, so far as the recognised work of art is concerned, to re-affirm dualism. When "Hamlet" had found expression in Shakespeare's mind, so I understand Dr. Bosanquet to argue, there was as yet no work of art. Something else and that quite alien in its reality to Shakespeare's mental activity was required, the material, in this case literary form. To which it seems to me Croce's reply would be to ask what would remain of this material, what beauty of expression would abide were our race to become as extinct as Neanderthal man, were there no mind whose imagination could respond in creation to Shakespeare's vision? And yet one sees easily enough the artist's difficulty and sympathises with the appeal which a friendly critic (Mr. Walkley) has addressed to Croce to make his theory of the relation of the material to the work of art clearer. But this it seems to me is of quite subordinate interest to the philosopher, and what I should like to know and cannot find clearly indicated, is the extent to which Dr. Bosanquet's own æsthetic theory commits him to ultimate philosophical dualism.

In an Appendix, Dr. Bosanquet deals with Croce's criticism of Hegel and particularly with a phrase he employs in regard to Hegel's Æsthetic, "the death of art". Dr. Bosanquet declares it to be a mistranslation of Hegel's word *Auflösung* which means dissolution, and he argues that the word "death" gives a totally wrong interpretation of the real meaning. He shows, very effectively, that for Hegel, as for Croce, art is a degree of the absolute spirit and whatever be the place of that degree its nature is not in question. Moreover any such condemnation as is implied in the word "death" would apply equally to Croce's own theory.

Finally, then, it seems to me that Croce by his æsthetic doctrine has given a concreteness to the concept of actuality as spiritual activity such as no philosopher before him has succeeded in giving. I use the word "actuality" purposely,—"reality" may have a transcendental meaning which "actuality" cannot have. The theory may seem to dethrone art; but when the philosophical principle is grasped it is seen that in humbling art it is exalting it.

H. Wildon Carr.

CROCE'S ÆSTHETIC.

PROF. CARR kindly invites me to send along with his account of my paper any reply that I may wish to make.

It appears to me that the difficulties which he feels in my view partly arise from my not having made a clean breast of my attitude towards Croce, and having confined myself to points which I thought outstanding examples of our differences. If I may, I will shortly restate the general position as I see it, in order to show just why and how far I attach importance to certain points.

1. I cannot accept the warning of Prof. Carr's first paragraph. If you identify Art and Beauty, you cannot separate the philosophical theory of Beauty from the investigation of its concrete differences, which you have pledged yourself to find in Art. And Croce certainly identifies Art and Beauty, and in fact frequently and carefully discusses the nature of the expressive utterance and vision which he equates with both. The æsthetic philosopher has nothing to do with rules of artistic appreciation, but he has to do with the differences in the spirit of man which utter themselves under varying conditions of expression.

2. Prof. Carr courteously refers to my *History of Æsthetic*. But its argument, to my mind, was other than he thinks. It was a philosophical argument, and aimed, in a word, at establishing the view that the post-Kantian absolute idealism sprang from the work done in æsthetic philosophy by many great men, confronted with Kant's antitheses, during the closing decade of the eighteenth century. This was simply Hegel's narrative of the facts. I took, and I still take it, to be obvious and true. I held myself to be merely dotting the i's and crossing the t's of a simple insight. All the book led up to it, except that part which completed the subsequent construction. It was a philosophical argument and conclusion. I said of the dominance of the Absolute standpoint, which I thus had traced to its climax, "Inner and outer, natural and supernatural, spiritual and material, are henceforward terms that have lost their meaning, except in reference to the higher and lower purposes of man".[1]

3. Therefore when Croce declares against transcendence, and in favour of the pure unity of beauty as an intuition-expression, one with the experience which is art, that is saying brilliantly what all students, I should think, agree with. But in labouring to intensify

[1] *History of Æsthetic*, p. 322.

to the utmost the singleness and purity of the experience, he entangles himself—such, I regret to say, is my real and inmost belief—in a fundamental error which takes two connected shapes, and affects his whole philosophy.

(i) The doctrine of the four phases of the spirit, Art, Logic,[1] Economic, Ethic, if not *determined by* the identification of the purity and singleness of æsthetic expression with priority to the operation of thought, coincides felicitously with it. And this priority, though not treated throughout in detail as temporal priority, is yet stamped as in principle an actual and exclusive antecedence by the identification of æsthetic and linguistic experience, which is Croce's special pride and delight and for the sake of which he destroys and removes one aspect, the logical aspect, of the latter. In fact, on whatever ground selected, the four phases of the spirit build up no whole, have no inherent dialectic, and are quite untenably and superficially distinguished.

I will at last take my courage in both hands and say that in my belief, if Croce had never heard of Vico, and had not been attracted to him by a love of paradox and by patriotism, his philosophy might have been impregnable and his art-theory profound. I believe it is the hoary fallacy of looking to the primitive for the pure and original, that, favoured by a chivalrous enthusiasm for a neglected fellow-countryman, has wrenched Croce's whole system out of gear. It may be true of literature that poetry is earlier than developed prose. But this "Ancient Opinion" insisted on by Vico as by our own Blackwell early in the eighteenth century, cannot conceivably justify a theory which destroys the essence of articulate speech in order to equate it with pre-conceptual intuition-expression.

And, since I may as well be hung for a sheep as for a lamb, I must add that I have sometimes doubted whether Croce's learning is entirely critical and reliable. He has read immensely, and uses his knowledge most effectively; but where he has come within the narrow range of my studies, over less than a thousandth part of his enormous field, I have found negligences and exaggerations that have shocked me as a scholar, notably in the accounts of Lessing and Schelling; and in the case of Hegel he seems to me, as Prof. Carr has mentioned, to have fallen victim to a grave misconception, which only impulsiveness and an unsound philosophical basis can account for.

(ii) The phases of the spirit, then, thus arbitrarily selected, have no room for externality. They allow, in fact, of no whole, no world, no universe. They have no inherent dialectic (I think that I see in the Breviario some advance in this respect, and with a change in it, much would be altered), no integration of differences; simply an arbitrary succession. External nature is for Croce only the physicist's abstraction. The glowing and splendid world in which for most of us it consists is ruled out of his theory, because,

[1] The system has no place for philosophy as such.

in that theory, a concrete existence of the spirit is inconceivable. And this he calls getting rid of dualism and transcendence! I am aware of his doctrine of history, but I do not consider it adequate. Now these are the reasons for my insisting on the objections which to Prof. Carr and others seem captiously taken.

The position of art and beauty among the forms of the spirit is, I believe, a flat self-contradiction. They are essentially prior to conceptual thought; that is the main point of the whole arrangement. But this is really impossible. There is no such prior stage. The image may be free from any explicit judgment; but to call it an image means that it is discriminated by thought and referred to objective conditions. How else could it be an image of anything? The intuition is thus at once pre-thought and an object of thought. Prof. Carr doubts my interpretation; but Croce's examples leave no doubt, "The intuitions are this river, this lake, etc." How can this river be other than an object of thought having identity, diversity, and all the rest? But in addition to this we have on our hands Croce's favourite doctrine; the equation of æsthetic and linguistic expression. Language as levelled with pure expression, is deprived, by Croce, of its conceptual side. But language without conceptual analysis is not human articulate speech. It could not communicate information. Undoubtedly, language possesses the continuous and poetic side which Croce ascribes to it, but as an aspect, not as a phase, an aspect out of which a transformation may grow. The æsthetic attitude is *learnt*, as Schiller explains. It is an acquisition, an interest transcending the actual and practical real, not an endowment primitive and prior to this latter interest. "Man is not civilised till he learns to value the semblance above the reality."

So with externalisation. The fusion of spirit and body *is* the æsthetic experience, and is a principal type of the unity of the world. That Croce has no theory of body as a category of spirit is just a case of the leanness of his idealism, which also is unable to include metaphysic or religion.

And the odd thing is that no one has more eloquently recognised the *actual* need for externality. Wherever he is arguing that nothing is art or beauty which is not expressed, he actually uses externalisation as the very test of expression. So with Prof. Carr's instance of Hamlet. Of course if all imagination were dead and gone Hamlet would be dead and gone too. No one says there is beauty without imagination; what we say is that complete imagination demands externality. The point is that Hamlet as a poem in Shakespeare's imagination *is* already a fusion and incarnation of Shakespeare's spirit in features of the external world, forms of verse, forms of language; "ringing words," as Croce well says. A Hamlet which is less than this is not Hamlet.[1] A Hamlet which is as much as this has sprung from an

[1] See notably Prof. A. C. Bradley on "Poetry for Poetry's Sake". Oxford Lectures on Poetry.

imagination wedded to the spoken language of England, schooled and inspired by its energy and sonorousness. A poem without its sound, I must maintain, is incomplete as a work of imagination. Shakespeare was taught and disciplined by the spirit which lived in England and in English speech. Without this externality there could be no Hamlet. The miracle is the incarnation of the spirit in the fact and the penetration of each by the other. This is the type of unity which the spirit follows at different levels. There can be no unity where nothing is unified, and no profound unity where the factors unified are not strongly opposed. To say that externalisation, as a category of the spirit, involves a dualism, is to say that it is a dualism when the musician's work is interpreted by the full orchestra. Surely this is the very type of spiritual synthesis, and the triumph of unity. To treat this performance as a practical means (economic)[1] for ensuring the preservation and communication of an imagined beauty separate from it, and complete without it, is surely the very feeble expedient of a philosophy, which finds itself trying to put asunder what the universe has joined together.

[1] See Croce on the four stages of æsthetic production, *Estetica*, 112 ff., and chap. vi., *ibid.*

BERNARD BOSANQUET.

VI.—CRITICAL NOTICES.

The Principles of Natural Knowledge. By A. N. Whitehead, Sc.D., F.R.S. Cambridge University Press. Pp. xii, 200.

This book of Prof. Whitehead's seems to me to be very important and distinctly difficult. These facts must be the excuse for the length and the almost wholly expository character of the present review. My main object is, not so much to criticise, as to render what Mr. Bernard Shaw, in the preface to one of his plays, calls 'first aid to critics'. It is a misfortune that the same book should fall twice into the hands of the same reviewer, as has happened in this case. It would be far better to have had the views of two different writers. I can only condole with Prof. Whitehead on his luck, assure him that it was not altogether my fault, and do my best to avoid simply covering the same ground twice over. In a book so rich in matter as this the last task is easier than it would be in many instances.

The book starts with a criticism of the classical concepts of mathematical physics; points, instants, momentary states, unextended particles, etc. It is not denied that such concepts are useful and even indispensable, but the question is: What is their real status? The ordinary physicist rejects such questions as almost indelicate, but for the philosophy of nature it is essential to give some answer to them. The plain straightforward answer is to say that they are particular existents, just as much as anything that we can perceive, and that they are the ultimate constituents of nature. Very few physicists have had the courage to say this and stick to it; the best statement of such a view, so far as I know, is to be found in the last few chapters of Mr. Russell's *Principles of Mathematics*. Even here, however, there is a certain amount of wavering about material, though not about space and time as such. It is insisted that the laws of motion must be expressed in an integrated form as regards time, because a differential coefficient is a mere limit; though for some reason the fact that a density is also a differential coefficient is not seen to lead to the same consequences as regards space and matter. In any case Mr. Russell has long ago deserted this view; and the position of the average physicist seems to be (*a*) that he either says nothing on this delicate subject, or professes himself to believe that the ultimate constituents of nature are extended and that space and time are relative, and (*b*) that, having done this, he always acts as

if he believed the opposite. Lastly, when asked what he supposes to be the relation of the sounds and colours which he does perceive to the atoms and molecules which he does not and to the points and instants which are still less like anything perceptible, he either replies that this is 'philosophy' or talks nonsense about sounds and colours being 'unreal'. The idealist philosopher then fastens on these incoherences; informs his readers that physicists move in a world of 'partial appearance' and 'relative truth,' which is quite good enough for persons of their crude understandings; and proceeds to discuss those questions as to whether the Absolute is (or is not) good or happy or a person, which are of such burning interest to minds of finer fibre.

Now the great merit of Whitehead's book I take to be this. He criticises the classical concepts, when taken to be the ultimate existents in nature, as severely as any idealist, though from a far more adequate knowledge and with much less *arrière pensée*. But he also knows that physics cannot get on without them, and believes that the final results of physics are true and verifiable of a large department of nature to a degree to which no philosophical theory can lay the least claim. His problem therefore is this: To define entities which (*a*) shall have the same formal properties and thus do the same mathematical work as the points, instants, etc.; and (*b*) which shall be so connected with the objects that we do perceive and with their perceptible relations that their reality in their own type is as certain as that of the perceptible entities and their relations in *their* type. If he can do this he has killed two birds with one stone. In the first place such entities will no longer be, at best, precarious inferences from what we do perceive (as are atoms or molecules on the usual view), or, at worst, entities which neither resemble what we perceive nor can be inferred from it as hypothetical causes (like points and instants on the absolute theory). They will be instead certain logical functions of what we perceive, defined wholly in terms of it and its relations and of logical constants. Secondly, these entities will now escape the criticisms to which they are exposed when they are regarded as particular existents and the real ultimate existential components of nature. For they now cease to make any such claims, since they are no longer of the type of particular existents but of logically higher types such as classes or classes of classes. They had formerly occupied an embarrassing position in the lowest seat at the feast of nature, and Prof. Whitehead has saved the situation by saying to them: 'Friend, go up higher' (in logical type)!

The object of the book then is to start with the genuine elements of nature which we meet in perception, and their relations; and to exhibit the concepts of physics—modified in accordance with Einstein's first theory of relativity—and *their* relations, as definite logical functions of the former. Thus the work falls into two parts: (i) the determination of the natural elements, and (ii) the detailed exhibition of the concepts as functions of them. In actual

fact Prof. Whitehead has accompanied (i) with a general verbal account of (ii), so that it is possible to understand the main drift of the book without reading the detailed logico-mathematical part of it. But a very great part of the value of such a work consists in the detailed proof that the concepts can be connected with the elements, by actually showing the connexion. Other philosophers could have suggested vaguely that the concepts must be some kind of logical function of the elements, but scarcely any except Prof. Whitehead could have worked out the suggestion to a successful conclusion in minute detail. I shall therefore first sketch Prof. Whitehead's view of the elements of nature, and then try to explain the logico-mathematical part of the book.

Nature consists of two fundamentally different but intimately connected types of entity, events and objects. Events are pure particulars, objects are universals. The fundamental connexion between the two is that events are the situations of objects, *i.e.*, an event is characterised by being such and such an object. Events therefore cannot recur in time or space, but objects can, in the sense that different events can be the situations of the same object. Objects are not strictly in space and time and consequently do not strictly have parts. The events which are their situations are in space and time and have parts which are other events. Thus the *event* characterised as 'being a leg of such and such a chair' is a part of the event characterised as 'being such and such a chair'; but the *object* 'being a leg of such and such a chair' is not in the physical sense a part of the object 'being such and such a chair'. It is easy to confuse objects with their situations and thus to imagine that they are in space and have parts.

Events are extended both in space and time. (An event has no special reference to change.) They fall into two great classes, those which are and those which are not durations. An example of a duration is the whole course of nature contemporary with any specious present of any percipient. It is thus limited in time and unlimited in spatial extension. The particular length of anyone's specious present is irrelevant; there are durations of all degrees of temporal extension; the important point is that all have infinite spatial extension and none have no temporal extension. Events other than durations are parts of durations, *i.e.*, are extended over spatio-temporally by durations. This relation of extending over is the fundamental one connecting events. It connects certain pairs of durations, as well as certain pairs of events which are not durations, and durations and the events which are parts of them.

Certain events other than durations have another fundamental relation to a certain duration. They are said to be cogredient with it. This means (*a*) that their temporal extension is the same as that of the duration, and (*b*) that they occupy a fixed spatial position within the duration.

The direct apprehension of events by a percipient consists in his discriminating certain parts of the content of his specious present

and regarding them against the undiscriminated remainder. Whitehead apparently holds that the percipient is not only aware in some sense of the undiscriminated background which would ordinarily be admitted to lie in his specious present, but also (though whether in the same sense, I am not sure) of the whole of nature contemporary with this, *i.e.*, with the whole duration.

Events, as we have seen, do not, strictly speaking, change; all that happens to them is that as the course of nature advances fresh durations are juxtaposed on to the front of others. In any duration constituting the content of a specious present the events connected with the mind and the bodily life of the percipient occupy an unique position denoted by the phrase *here-now* in the duration. This event is called the percipient event and it is evidently cogredient with the duration. The ether, according to Whitehead, is the whole continuum of events, and its continuity expresses the facts that any event extends over some and is extended over by other events and that any pair of events are extended over by some third event.

Now there are a great many alternative ways in which a duration can be analysed into events; and the products of different modes of analysis will have different characteristics, *i.e.*, they will be the situations of different types of object. It must not be supposed that there is anything specially subjective or arbitrary about these alternative modes of analysis. We can only analyse out what is actually in nature, and therefore no type of object is more 'real' than another. But some modes of analysis are more useful for one purpose and others for another. The most important modes of analysis lead respectively to events which are situations (*a*) of sense-objects (*e.g.*, sense-data), (*b*) perceptual objects (the chairs and tables, etc., of ordinary life), and (*c*) scientific objects (electrons, etc.). Of these (*a*) are the simplest (*b*) the most useful for everyday life, and (*c*) the most useful for disentangling the laws of nature. But all are equally real in the sense that there really are events in nature which are the situations of objects of each of these types.

Perception is a complicated business. Like all our awareness of objects it implies the power to recognise the same object in different situations (*i.e.*, different events as being instances of the same universal). A perceptual object is an association of sense-objects. Generally we are only aware of a few of these at a time, but they *convey* the rest. Conveyance is not judgment, but is what psychologists term complication and acquired meaning. On this there supervenes a perceptual judgment, part of the contents of which is that the same object (with certain permissible modifications) would be perceived by other percipients from other situations. If this be true the perceptual object is 'real,' otherwise it is 'delusive'. Analysis reveals the fact that objects are only perceived when certain conditions are fulfilled and that the sense-objects which convey the perceptual object vary with these conditions. The

conditions split up into two classes, generating conditions and transmitting conditions. When a perception is not delusive the situation of the perceptual object is a generating condition for the sense-object through which the perceptual object is perceived.

The scientific object is the result of further reflexion on the generating conditions of the perception of perceptual objects. The perceptual object is thus a link between sense-objects and scientific objects. Its situation is the situation of the scientific objects which are the generating condition for the sense-objects through which it is perceived. Perceptual objects, though useful for practical life, are not of much use for exhibiting the laws of nature. Their identity and their limits are too vague. Hence we have to replace them for scientific purposes by generating conditions of a more definite kind. The study of these generating conditions leads to the concepts of the atom and the electron; the study of the transmitting conditions leads to the ether, which is not a material object but a continuum of spatio-temporally overlapping events.

An uniform object is one that can characterise an event however short its temporal extension, non-uniform objects can only characterise events of a certain minimum temporal extension. A chair (as perceived), or any other perceptual object, is uniform, a tune or a molecule of iron is non-uniform. Now it might seem that the case of perceptual objects leads to a contradiction. They appear uniform, and they are what they appear. On the other hand they are said 'really to consist' of molecules in motion, and these are non-uniform. The answer is that we must distinguish between the apparent and the causal characteristics of an event. The same event is the situation both of the uniform perceptual object which is the chair and of the non-uniform scientific objects which are the generating causes of the chair being perceived in this situation. Some events are the situations only of causal and not of apparent objects, *e.g.*, events in the ether of space.

If we confined ourselves to sense-objects their laws would be wildly complex, involving as they do generating and transmitting conditions, and, among these, abnormal conditions such as excess of alcohol in the stomach of the percipient. The first step away from these complications is the perceptual object, a complex perceived with slight modification by all normal percipients under all ordinary conditions. We cannot however stop there, partly because of the vagueness of perceptual objects, and partly because we are still left with delusive perceptions on hand. The scientific theory then arises with its scientific objects which are causal in character. Scientific objects are characteristics of an higher order than perceptual objects, they are characteristics of characteristics. Their laws are much simpler than any that we have yet met. Though the presence of a perceptual object in a situation does in fact depend, not only on that situation but also on all other events in the world, yet fortunately it depends predominantly on the scientific objects in that situation, in the case of non-delusive perceptual objects at any

rate. Finally, on the basis of what it knows of normal perception, the scientific theory is prepared to deal with the residuum of perception which has delusive objects. It is worth noticing that there is a slight trace of delusiveness in all and a considerable dose of it in some perceptual objects which would usually be reckoned non-delusive. This is because light and sound take some time to travel, so that the situation of the causal components of a given perceptual object is always somewhat earlier than the situation of the perceptual object itself.

From the point of view of science the causal objects seem fundamental and sense-objects mere consequences of them; from that of the theory of knowledge sense-objects seem fundamental and scientific objects mere abstractions from them. The actual truth is that both are equally genuine characteristics of nature, and the differences only rest on the ways in which we get to know them and the use that we make of our knowledge of them.

It is commonly assumed that the ultimate scientific objects must be uniform, in the sense defined above. It is by no means certain that this is true, and in any case non-uniform objects with certain characteristic and recurrent rhythms play a most important part even in pure physics. We can thus see the necessity for some such hierarchy of microscopic and macroscopic equations as Lorentz uses. The electron is uniform; the molecule or atom composed of definite numbers of electrons circulating in definite ways is non-uniform; but once again the collection of many molecules forming a lump of metal is uniform through the averaging out of the rhythms of its component molecules.

Prof. Whitehead suggests, very plausibly I think, that the peculiarity of a living body is that in it we have not a mere average but a macroscopic rhythm. It is obvious that an event characterised as a living being must not be too short; an instantaneous cat is quite as difficult to conceive as Alice found a grin without a cat to be.

I have no space to deal more fully with the philosophical part of the book because I want to try to make the more detailed deductions clear to the reader. To this part then we will now turn.

Events have to each other the fundamental relation of *extending over*, which Whitehead denotes by K. We must remember that an event is best illustrated by a fragment of the content of a specious present. This, in ordinary language, would be said to have some extension both in space and in time. A pair of such fragments may be so related that one spatio-temporally covers the other, and extends beyond it. This is the sort of relation denoted by K. K is an asymmetrical, transitive, relation, and the field of it is assumed to be compact. It is not however connexive, and therefore not serial. This means that, although all events extend over some events and are extended over by others, yet there are pairs of events which do not stand to each other either in the relation K or $\breve{K}$.

The relation K gives us the meaning of *physical* part and whole, as distinct from the merely *logical* part and whole (the relation of a subclass to a class that contains it). The two are often confused, but it is easy to see that they differ when we remember that the physical parts of a whole constitute it by being everywhere adjoined along common boundaries without overlapping. A set of events so related to another event is called a *dissection* of the latter. Whitehead gives logical definitions of dissection, injunction, adjunction, intersection, etc., in terms of K.

One of the axioms laid down for K is that for any two events there is a third event that extends over both of them. This axiom seems to me to be too sweeping and to contradict an important part of the sequel. There is, as we shall see, a certain very important class of events called durations. Durations can only be extended over by other durations. On the electromagnetic theory of relativity (which Whitehead adopts) there are pairs of durations which are not extended over by any third duration (and therefore not by any third *event*). Thus there are events that do not fulfil this axiom, which ought therefore (unless I am talking nonsense) to be restricted to events other than durations.

We next come to the very important concept of an *abstractive class* of events. We have seen that K, when unrestricted, is not serial because it lacks connexity. Now α is an abstractive class if (i) K with its field restricted to members of α is connexive and therefore serial; and (ii) α has no minimum with respect to K. Thus an abstractive class of events is a series of events extending over each other like Chinese boxes and having no smallest box. By means of such classes it is possible to give a meaning to the notion of 'unextended events' without assuming that there literally are such entities in the sense in which there are extended events. This method is called the *Method of Extensive Abstraction*, and, as it is the foundation of the whole building, it is worth while to be quite clear about it. Mathematicians used to define irrationals as the limits of certain series of rationals. The objection to this is that there is no means of proving that such series have limits at all, and therefore irrationals, so defined, may be in the same logical position as the most perfect being or the present king of France. But it was found that the series themselves, whether they have limits or not, have all the properties that irrationals are supposed to have, provided that suitable senses are given to addition, multiplication, etc. And these new senses are such that addition, multiplication, etc., obey precisely the same formal laws as the addition and multiplication in the old sense as applied to rationals. Thus irrationals are *defined* as those series which were formerly said to have irrationals for their limits. The advantages of this procedure are (*a*) that in this sense, there can be no doubt that irrationals exist if rationals do, for these series of rationals are certainly as real as the rationals themselves; and (*b*) that irrationals, so defined, have all the properties that have

usually been assigned to them. It is true that, *e.g.*, in the statement $\sqrt{2} \times \sqrt{3} = \sqrt{3} \times \sqrt{2}$ the symbol $\times$ has not the same meaning as in the statement $2 \times 3 = 3 \times 2$. But all the formal properties of the two objects denoted by the now ambiguous symbol $\times$ are exactly the same, and these are the only properties that we make any use of.

Now the Method of Extensive Abstraction is simply the application of the same principle to physics and geometry. We should like to think of points, instants, event-particles, etc., as the limits of abstractive classes. But we have not the least reason to think that such limits exist. On the other hand we cannot get on with our geometry or physics unless we are allowed entities with the properties commonly assigned to points, instants, particles, etc. The solution of the difficulty is found in the fact that the abstractive classes themselves (which as series of events of a certain kind are just as certainly real as the event themselves) or, more accurately, certain functions of them, have to each other relations which possess all the formal properties usually ascribed to the relations of points, instants, etc. We can therefore be sure (*a*) that points, etc., in the sense of certain logical functions of abstractive classes will do all the mathematical work required of such entities, and (*b*) that, in this sense, they are no more fictitious than events themselves, though they are entities of a higher logical type.

Now there are a great many different entities of this abstract kind needed in geometry and physics, *e.g.*, points, lines, planes, instants, instantaneous volumes, momentary point-events, and so on. Thus a great number of special applications of Extensive Abstraction will be needed to define suitable abstractive classes in each case. To set about this work of definition, Whitehead introduces the concept of *primeness* (and *antiprimeness*) of an abstractive class with respect to a *formative condition.* An abstractive class is prime with respect to any formative condition σ when (*a*) it itself possesses the property σ, and (*b*) it is *covered* by any abstractive class that also possesses the property σ. A class β covers a class α if every event in β extends over some event in α. It is thus clear that a class which is prime is a sort of minimum abstractive class out of all those that have a given property σ. Similarly a class that is antiprime is a sort of maximum abstractive class. Antiprimeness is going to lead to moments by way of durations, since a moment refers to a whole of nature spread out in space. Primeness is going to lead to event-particles, *i.e.*, events thought of as unextended in space and time.

So far no restriction has been placed on the formative-condition σ of our abstractive classes. To define moments and particles we must do this. The restriction is that σ shall be *regular* for primes (or antiprimes). σ is regular for primes when (i) there are abstractive classes which are prime with respect to σ, and (ii) all such classes both cover and are covered by each other. (Two

classes that fulfil the condition (ii) are said to be *K-equal*. K-equality has the usual properties of equality or identity or equivalence.)

We now define an *absolute antiprime*. This is a class which is antiprime with respect to the condition of covering itself. Such a class covers every class that covers it, and is thus a sort of absolute maximum among abstractive classes. Any member of any absolute antiprime is what we mean by a *duration*. For a duration, as we have seen, is the whole of nature contemporary with the content of a specious present. It is thus an event with a finite temporal and an infinite spatial extension. It is clear that an abstractive class containing events other than durations would not cover *every* class that covered it, since it would be covered by certain classes of durations and would not cover these, because the events in it which were not durations (being of finite extent) could not extend over any duration (since that is of infinite extent). Thus if an abstractive class be an absolute antiprime its members must be durations.

Now this formative condition of covering itself, which is the characteristic mark of abstractive classes of durations, is regular for antiprimes. This means that all the antiprimes that cover any assigned absolute antiprime α are K-equal to each other. In such a case the logical sum of these K-equal classes (*i.e.*, the class whose members are all their members) is called an *abstractive element*. This is defined as the *moment* determined by the abstractive class α of durations. Thus a moment is a certain class of durations, *viz.*, all those durations that belong to any one of a set of abstractive classes which cover an assigned abstractive class of durations.

We are now able to define parallelism of durations and moments, and it is at this point that the question of Newtonian or Lorentz-Einstein relativity enters. If there be a single time-series independent of change of spatial axes, as the classical theory holds, any pair of durations will be extended over by some third duration. But, if Lorentz and Einstein be right and the temporal co-ordinates have to be varied as well as the spatial ones on passing from one set of axes to another in relative motion, it is only the durations of each time series that fulfil this condition; those of two different ones do not. Whitehead adopts the latter view, as indeed we are compelled to do by the facts. He thus gets a definition of parallelism. Durations are parallel when any pair are extended over by a third, otherwise they are not parallel. The moments corresponding to a set of parallel durations are parallel moments. Families of parallel durations and their moments constitute *time-systems*.

I have already said that the supposed existence of non-parallel durations seems to contradict one of the axioms about K. Again we are told that two non-intersecting durations are parallel. I am not clear as to whether this can be proved from the axioms given

about K or whether it is to be accepted on the authority of the Theory of Relativity. It is now easy to give a definition of one moment being between two others and thus to establish a continuous serial order among the moments of any time system.

We are then able to define the instantaneous planes, straight lines, and points of a given time system. If we think of thinner and thinner durations within each other we see that they converge to a total state of nature at a moment as an ideal limit, *i.e.*, to an instantaneous three-dimensional 'snapshot' of nature. Now a pair of non-parallel moments intersect. Thus their intersection will correspond to the intersection of two such instantaneous solids, and will be an instantaneous plane in the time-system of either moment. Such an instantaneous plane Whitehead calls a *level.* (For purposes of illustration we have spoken as if there really were these ideal limits, actually they must be replaced, as always, by the abstractive classes and elements which would commonly be said to converge to them. Thus the level l_{12} is really the class of abstractive classes and elements which are covered both by M_1 and by M_2 where these are two non-parallel moments.)

Levels may either be parallel (if *e.g.*, they are the intersections of a moment by two moments of another time system) or they may intersect. Their intersections are called *rects* and are instantaneous straight lines. Lastly two rects may intersect, giving a *punct, i.e.*, an instantaneous point in the spaces of the moments in which it lies. The order of puncts on rects in a time-system α depends on the order of the moments in any other time-system β. Every punct on a given rect falls in one moment of β and every moment of β contains one punct on the given rect. And the order will be the same for a given rect whatever other time-system β, non-parallel to its own, we choose to define the order. Puncts, rects, and levels thus form an instantaneous Euclidean space in a moment of a given time-system.

We want now to pass beyond the restriction to single moments in single time-systems, under which we have so far in the main been working. To do this we define an *event-particle.* Event-particles are connected with absolute *primes* in much the same way as moments are connected with absolute *anti*primes. Let κ be any punct. Then an absolute prime connected with κ is an abstractive class fulfilling the following conditions: (i) it must cover every class that belongs to κ and (ii) Any class that fulfils condition (i) must cover it. These conditions (unless I am mistaken) are neatly summed up in the form: $\alpha \varepsilon p^{\frown}\overrightarrow{\Gamma}^{\prime\prime}\kappa : p^{\frown}\overrightarrow{\Gamma}^{\prime\prime}\kappa \subset \overrightarrow{\Gamma}^{\prime}\alpha$, where α is the class that we are describing, Γ is the relation of covering, and the other symbols have their usual meanings.

It is very easy to prove that the condition just stated is regular for primes; it follows that the logical sum of the class of such classes as α is an abstractive element. This abstractive element is defined as the event-particle connected with the punct κ.

All the event-particles in the whole course of nature form the

points of a four-dimensional manifold (Minkowski's 'space-time,' presumably). For a pair of comomental point-events it is clear that the straight line joining them will be correlated with the rect in the momentary space which joins their puncts. But when point-events are not comomental (*i.e.*, are *sequent* in time), it is necessary to give a special definition of lines joining them. This is done in the now familiar way by (*a*) defining linear abstractive classes; (*b*) linear primes; and (*c*), after showing that their formative condition is regular for primes, linear abstractive classes. These are called *routes* and are not of course in general rectilinear. When certain further conditions are imposed on them they become *kinematic routes*, *i.e.*, possible paths for moving material particles. In a similar way *solids* (which may or may not be comomental) are defined and also volumes.

Any finite event can, in a certain sense, be analysed into the set of event-particles that inhere in it. Of course no event-particle is, in the physical sense, a part of an event, since it is an object of an entirely different logical type. (This accords with the common-sense view that, however long you went on dividing up an event or a solid, you would never reach an event that took *no* time or a piece of matter that occupied *no* space.) But there is an unique correlation between any event and a certain bounded set of event-particles which form a continuum; and again, if one event be a *physical* part of another, the set of event-particles correlated with the former will be a *logical* part of the set correlated with the latter. (This accords with the scientific view that extended events and bits of matter can be treated for mathematical purposes as if they were composed of instantaneous states and unextended particles.)

So far we have considered two kinds of manifold, which have characteristic geometries. (i) The three-dimensional Euclidean space of a given instant in a given time-system. (Its points, straight lines and planes are puncts, rects, and levels.) (ii) The four-dimensional 'space-time' whose points are event-particles. So far we have only defined its straight lines in the particular case of comomental event-particles, and we have not defined planes in it. Now neither of these two manifolds is the space of physics. The first is what we approximate to in an observation as the observation takes less and less time; it is thus the sort of thing that psychologists presumably mean when they talk of a perceptual space. The second is neither space nor time but a manifold compounded of both. To complete the geometry of this and to provide the ordinary space of physics whose co-ordinates are the x's, y's, and z's of our differential equations we need a third kind of manifold. This is the space of a given time-system, and may be called a *timeless space* in the sense that, unlike (i), it is neutral as between all the moments of the time-system to which it belongs.

For this purpose we need to make use of the other indefinable

relation beside K, *viz.*, *cogredience*, which Whitehead denotes by G. An event is cogredient within a duration when (*a*) any duration of the same time-series that intersects the given duration also intersects the event, and (*b*) the event has an unchanged position within the duration. Practically this means that, if we regard the duration as the content of the specious present of an observer whose perceptive powers were not limited by the spatial remoteness of events from his body, a cogredient event is a part of this content which (*a*) lasts through the whole specious present and (*b*) does not change its position relative to the body of the percipient during the specious present.

By means of abstractive classes of cogredient events we define in the usual way (i) *stationary primes* connected with a given event-particle in a given duration. Then (ii) we prove that the formative condition of such primes is regular for primes and therefore gives rise to an abstractive element. Lastly (iii) we define this abstractive element as the *station* of the given event-particle in the given duration. It will be seen that a station is, roughly speaking, the ideal limit of a set of cogredient events covering the event-particle as these events get thinner and thinner in their spatial extension. A station intersects every moment in its duration in a single event-particle and any one of these particles can equally be taken as the one that determines the station. It can be proved that, if one duration is part of another and P be an event-particle in both, the station of P in the partial duration is a part of the station of P in the total duration. Consequently any station in a duration of a time-system can be prolonged throughout all the durations of that system. The set of event-particles on such a prolonged station is called a *point-track.*

Point-tracks play two parts. They are (*a*) the, as yet undefined, *straight lines* joining pairs of sequent event-particles in the four-dimensional space-time; and (*b*) they are the *points* of the timeless space associated with their own time-system. The straight lines of space-time are now complete except for a certain exceptional kind called *null-tracks* (which correspond, if I am not mistaken, to the generators of the fundamental cone in Minkowski's theory). It remains to define the planes and straight lines of the timeless space of a given time-system, and the planes of space-time.

Just as rects are correlated with some (*viz.*, the comomental) but not all of the straight lines of space-time, so levels are correlated with comomental planes in space-time. But this does not exhaust all the planes in space-time and therefore we need a more general conception, called by Whitehead a *matrix*, which shall include both comomental and non-comomental planes. A matrix is either the comomental event-particles of a level, or is the class of event-particles on all the point-tracks determined by any event-particle in an assigned rect and an assigned event-particle not comomental with that rect. For completeness we must also add the event-

particles on the rect through the assigned event-particle which is parallel to the assigned rect. (The reader will observe the analogy of this definition to the definition of a plane in ordinary geometry by a straight line and a point non-collinear with it.)

The elements of the geometry of space-time have now all been defined. It still remains to define the straight lines and planes of the timeless space of a given time-system. A point-track in its own time-system, as we have seen, is a point in the timeless space for that system, for any point-event on it will be in the same station at every moment in the system. The same point-track will intersect the moments of a non-parallel time-system at different stations for each moment in that system. Thus observers in that system will observe a particle moving in a straight line with respect to them. Thus the points of one time-system are the straight lines of any non-parallel time-system. Straight lines in the space of a given time-system can also be defined by means of matrices. If any point-track be chosen the point-tracts which constitute the remaining points of the space of its time-system are said to be *parallel* to it in space-time. A set of parallel point-tracks therefore is a set of points in the space of a single time-system. If the further condition be imposed that the set lies in a single matrix this set constitutes a straight line in the space of the time-system to which they belong.

We may now sum up the information given by Whitehead about the various manifolds that have to be considered in dealing with nature.

MANIFOLD.	POINTS.	STRAIGHT LINES.	PLANES.	PHYSICAL STATUS.
Instantaneous Spaces.	Puncts.	Rects.	Levels.	The ideal limits of perceptual spaces as time is decreased.
Timeless Spaces.	Point-tracks of a parallel family.	Comatricial sets of parallel point-tracks.	?	The spaces contemplated by physics in its differential equations.
Space-time.	Event-particles.	Point-tracks, null-tracks, and sets of co-rect event-particles.	Matrices, and sets of co-level event-particles.	The space-time of Minkowski.

Whitehead does not, unless I have made an oversight, define the planes of a timeless space, but it would of course be easy enough to do this by means of an assigned point-track not on a given matrix and the set of parallel-point tracks on that matrix.

It still remains to set up a system of metrical geometry and of time-measurement for the timeless spaces of time-systems. In order to use rectangular Cartesian co-ordinates it is necessary first to define normality and then to define congruence. The definition of normality is a long and difficult story. It must suffice to say that it is proved that though any point-event sets of three rects which are mutually normal (in a sense defined by Whitehead) exist. Now it will be remembered that a straight line in the time-system of α is a set of parallel point tracks all contained in a matrix of space-time. Any moment of α will intersect this matrix in a rect of the momentary space of α belonging to the given moment; and each punct of this rect will be occupied by an event-particle which belongs to one of the set of parallel point-tracks that constitute the straight line of α-space contained in the matrix in question. Thus there is a correlation between the rect in which a moment of α intersects a matrix associated with α and the straight line of the space of α which is contained in this matrix. The rect is said to *occupy* the straight line. We define mutually rectangular axes in the space of α as the straight lines occupied by the mutually rectangular rects through any event particle in the momentary space of a moment of α. Thus sets of mutually rectangular axes are possible in the space of any time-system.

It may help the reader if I try to indicate the physical meaning of some of these abstract concepts, even though I reverse the logical order in doing so. A point in the space of α would be the position of a particle that stood still as the α-time changed. It will thus appear in space-time as a linear series of event-particles parallel to the t axis, if we choose the time of α as the t axis for space-time. All the other points of α-space will similarly be represented by point-tracks parallel to this t-axis in space-time. Hence the statement that the points of α-space are a family of parallel point-tracks in space-time is explained. A straight line in α-space will represent the successive positions of a material particle as the α-time changes, subject to the condition that these positions are collinear. Each position will be represented in space-time by one point-track, *viz.*, that of a particle which should *permanently* occupy the position in question in α-space. We have seen that all these point-tracks for a given system α will be parallel. It thus becomes clear that a straight line in α-space is represented by a certain selection of parallel point-tracks in space-time. With the same assumption as before about the t-axis for space-time we can regard all the point-tracks which are points in α-space as forming a kind of solid four-dimensional cylinder in space-time with t^{α} for its axis. A straight line in α-space will then be represented in space-time by the generators of this cylinder which lie on any section of it by a plane containing its axis. Such a plane will be a matrix, it will contain one and only one straight line of α-space and so will be an associated matrix. And it will of course contain other

families of parallel point-tracks each of which constitutes a straight line in the space of some other time-system. It is evident that the section of such a matrix by a moment of α will be a rect in α. For this means: Take a set of points in the plane such that t is constant. We shall get a set of point-events that are comomental and collinear, *i.e.*, they will lie on a rect of the instantaneous space of the given moment in α. This will be the rect in the instantaneous space of that moment which is correlated with the straight line of α-space contained in the given matrix.

The definition of congruence is again somewhat difficult. The opposite sides of a parallelogram formed of rects in a level are *defined* as congruent, and stretches on the same rect which are congruent with a third stretch are assumed to be congruent with each other. It is then proved that congruence has this kind of transitiveness even when the two stretches are not on the same rect. So far, however, we have only defined congruence between stretches belonging to rects or point-tracts of parallel families. To extend it to non-parallel families the notion of normality has to be used. If two rects, or a rect and a point-track, intersect at M and are normal, and if AM and BM on one rect or point-track be congruent, then the stretches joining any point on the other rect or point-track to A and to B are defined as congruent. If a certain assumption be made we can show that on any pair of rects congruent pairs of stretches can be found. It is now possible to set up axes for the space of any time-system. If we further assume it to be a law of nature that the velocity of α in the space of β is equal and opposite to that of β in the space of α, when these are any two time systems, we can measure and compare time-lapses. Prof. Whitehead then deduces the connexion between the co-ordinates $x_\alpha, y_\alpha, z_\alpha, t_\alpha$ of an event-particle with respect to the space and time of α and $x_\beta, y_\beta, z_\beta, t_\beta$ the co-ordinates of the same event-particle with respect to the space and time of β. A certain constant κ is involved in these equations of transformation, and according as it is made infinite, negative, or positive we get a Euclidean (Parabolic), elliptic, or hyperbolic type of kinematics. If it be made equal to O, the results clearly conflict even with quite gross observations.) The elliptic type also conflicts with observation. The parabolic type corresponds with the Newtonian theory of relativity and agrees with observations to a very high degree of approximation. It breaks down, however, in certain very delicate experiments (Michelson-Morley, etc.) whilst the hyperbolic type does not. Thus we are practically tied down to the hyperbolic type, where $\kappa = c^2$ and c is the velocity of light. Whitehead's equations then become identical with those of the Lorentz-Einstein theory of relativity.

It is worth while to note that Whitehead has not needed to make the slightest use of light or its velocity in reaching his transformations. The general form of these has emerged simply and solely from considerations about events, their overlapping, and

their cogredience with durations; the definitions of congruence and normality; and the assumption about the velocity of one system in the space of another. It is only at the very last stage, when we ask: What particular value of this general constant κ gives us a system of kinematics that fits all the known facts? that we have to introduce the velocity of light. The existence of such a constant as κ really means that the units in which we measure space and those in which we measure time are congruent with each other.

C. D. Broad.

VII.—NEW BOOKS.

Aristotelian Society, Supplementary Volume II. : Problems of Science and Philosophy. Papers read at the Joint Session of the Aristotelian Society, the British Psychological Society, and the Mind Association, 11th-14th July, 1919. Williams & Norgate. Pp. 220.

The Aristotelian Society has adopted the excellent plan of collecting the papers read at certain of its symposia and publishing them in supplementary volumes. This is the second; the first being entitled *Life and Finite Individuality*. The present volume consists of four parts : a long paper by Mr. Russell on *What Propositions are and how they mean* ; a symposium on *Time, Space, and Material*, by Profs. Whitehead, Nicholson, and Wildon Carr, Dr. Head, Mrs. Stephen, and Sir O. Lodge ; a discussion of the question : *Can Individual Minds be included in the Mind of God?* by the Dean of Carlisle, the Bishop of Down, Prof. Muirhead, and Dr. Schiller ; and another on the question : *Is there 'Knowledge by Acquaintance'?* by Prof. Dawes Hicks, Drs. Moore and Edgell, and the present reviewer. The whole constitutes a very interesting contribution to current philosophical controversies. I propose to deal with the three symposia as briefly as possible, and then to give a short account of Mr. Russell's paper, which, whatever may be thought of its other merits, is certainly the most startling in the collection.

Perhaps the most noteworthy feature of the symposium on *Space, Time, and Material* is the singular irrelevance of some of the contributions. Dr. Head gives a most interesting paper summing up the results of his physiological work on cutaneous sensations. Like all first hand accounts of his own researches by a great experimentalist it makes fascinating reading ; but I cannot see that it has much bearing on the question under discussion. Sir Oliver Lodge's paper contains nothing that calls for comment, and throws no fresh light on the subject. Prof. Whitehead's paper is a sketch of the ideas which he has since developed in much greater detail and published in his *Principles of Natural Knowledge*. A good deal that is obscure in the symposium becomes clear when read in the context of the book. This contribution is of course the *chef d'œuvre* of this discussion. In Prof. Nicholson too we have a symposiast with a first-hand knowledge and a complete mathematical grip of the ideas and results of modern physics. The result is an excellent paper, in so far as it tells us about the quantum theory, points out the important distinction between the microscopic and the macroscopic, and raises the question whether the concepts that are fundamental in the one region will be so in the other. But, just as Dr. Head's paper is interesting physiology with little bearing on philosophical questions, so Prof. Nicholson's paper is interesting physics leading to no very definite formulation of the question and still less to any definite answer. Mrs. Stephen's contribution is, as usual, Bergson done much better than Bergson could do it himself. She does not indeed, to my mind, succeed in making the French philosopher intelligible, but her attempts are always amazingly clever and remind the present writer of Dr. McTaggart's relation to Hegel, about which one feels that the

disciple is so much better than the master that it is a pity that he keeps up the form of being a disciple. I understand her view to be that science is necessarily stated in the form of words and in terms of universals; that universals are not really exemplified by nature; and that they are definite, distinct, and related,—in a word, 'logical,' or as Bergson, for reasons best known to himself, would say 'spatial'—whilst nature has none of these attributes. No reason whatever is produced for the negative part of this view. The question then arises: How do scientific concepts come to serve us so well in our practical dealings with nature? The answer is as follows: In every phenomenon we can distinguish two aspects, each by itself a fiction, both present in various degrees in different phenomena. One is the factor of mere sensation, the other the meaning which is always conveyed by a sensation. The former can recur, the latter is never exactly the same twice over. The former factor corresponds to material and can be treated by science, the latter cannot be so treated. In proportion as the former predominates in any region of phenomena, science can successfully deal with that region. The second factor is due to memory and is characteristic of mind. The theory appears to me to express certain truths but to express them in a thoroughly confusing way. It is of course true that precisely similar stimuli when repeated produce somewhat different total states of mind. But (*a*) the stimuli are not themselves 'bare sensations'; they are not sensations at all; and, because it is a fiction to talk of the repetition of exactly similar sensations, it does not follow that there is any fiction in the supposed repetition of exactly similar stimuli. Again (*b*) because the total state of mind is different on each repetition of the stimulus it does not follow that the sensations are not exactly alike, in the sense that they are awarenesses of precisely similar sense-data. Sometimes the sense-data themselves *are* modified qualitatively, *e.g.*, in so-called 'complication'. But there is no logical necessity why they should *always* be modified in their sensible qualities merely because they have acquired new meanings; and, in the numerous cases where no such modification can be detected on careful inspection, it seems wholly otiose to suppose that it is really present. The other truth is the following. Colours and sounds may be quite uniform, yet science ascribes them to vibrations of varying frequency. Obviously it takes a number of vibrations in a finite time to give a characteristic frequency. Thus a seen uniform colour corresponds to the repetition of a large number of similar stimuli none of which separately would give a sensation of that colour. Memory is once more called in by Bergson and Mrs. Stephen to produce the rabbit out of the hat. There are several comments to be made on this procedure. Memory is now being used in a quite different sense from that noted above. There is no reason to suppose that the single vibrations produce any sensation at all, still less that a seen colour is the sensation produced by one vibration after this has been complicated with or has acquired a meaning in terms of those produced by the previous exactly similar vibrations. Either memory here 'holds in tension' the vibrations themselves or supposed elementary sensations due to each separate vibration. On the former alternative all analogy with any psychologically verifiable process has utterly vanished. On the latter we must say that, since there is no evidence that the separate vibrations produce any sensation at all, and no reason to suppose that, if they do, these sensations resemble those of colour in the least, it is doubtful whether memory has anything to 'hold in tension,' and still more doubtful whether it could do the work assigned to it. For in those cases where we know that on repetition an actual qualitative modification of the sense-data takes place (and they are the exception) this modification is a comparatively small one, whilst here the difference which memory would have to make would

be to produce a definitely coloured sense-datum out of sense-data which we have every reason to think would have neither this nor any other colour. Finally, we must remember that it is only one particuar interpretation of the scientific theory (though it is no doubt the one which most scientists believe) that the vibrations in some sense produce the colour. They may, after all, simply direct our attention to the colour already present in a physical object. The particles of all objects that are really red may vibrate with a certain frequency and the sole function of this may be that it is a factor in causing us to become aware of the redness that is always present in this object.

Prof. Carr in the main agrees with Mrs. Stephen, and, after a very fair summary of the contributions of the other symposiasts, concludes his own with an attempt to show that the modern conception of Relativity was anticipated by Descartes and in some respects more consequently thought out by him and his immediate successors than by modern relativists.

The symposium on Finite Minds and the Mind of God is opened by Dean Rashdall in a powerful paper on the negative side. Common-sense denies that one mind can be a part of another, and it is right. Philosophers persuade themselves to the contrary by thinking that identity of content implies identity of knowing subjects. The difficulty is not diminished in the least by holding God to be timeless; 'we do not understand time, but we shall not understand it any better by talking nonsense about it'. Finally Prof. Pringle-Pattison is gently twitted with a desire to run with the hare and hunt with the hounds in this matter.

Prof. Muirhead holds that, in spite of difficulties, a meaning can be attached to the phrase that finite minds are parts of God's mind, in which this shall be both true and important. After rejecting other possible interpretations, he concludes that such a meaning is found in the connexion between God's purpose and the purposes of finite persons. Dr. Schiller rejects this view, and, in the main, agrees with the Dean of Carlisle. He submits, however, that the facts about multiple personality do offer additional senses in which one mind might be part of another, though they hardly suggest that the relations between God and man on this view would be of a friendly character or that God's mind would compare favourably with those of his creatures. It seems to me that even here there is at most total or partial identity of *content*, together with an immediate knowledge of some things which one person can commonly only know mediately about another. Dr. Schiller says that most religious conceptions, being based on partially inconsistent desires, involve contradictions; but holds that this is no special objection to them, for 'the mathematician thinks nothing of inventing a symbol for an impossible operation like $\sqrt{-1}$ . . .; and when he has done so troubles himself no further with any logical protests'. Dr. Schiller may be right about religion; but he is certainly wrong about mathematics, as half an hour's study of chapters vi., vii., and viii., of Prof. Whitehead's *Introduction to Mathematics* will show him. Dr. D'Arcy contends that it is necessary to suppose that something exists to unify various finite minds, just as (according to him) they unify the material world. Now, as material objects do not lose their own peculiarities by this unification, so there is no need to suppose that finite minds lose their individuality in the unity of God. God cannot be held to be a self in the literal sense, but it does not follow from this, as Bradley thinks, that *nothing* is literally a self; and, since selfhood is the highest kind of unity that we know, we are justified in ascribing it to God *sensu eminentiori*.

In the symposium about knowledge of acquaintance, Prof. Dawes Hicks and Miss Edgell denied its reality, without otherwise agreeing among themselves; Dr. Moore argued that there could be no doubt of the *fact*, though there might be grave doubt as to certain statements made about it by Russell and others; and the present writer attempted to clear up certai n

ambiguities in the question and to deal with some of the arguments used by Prof. Dawes Hicks.

It remains to deal with Mr. Russell's contribution. He has been trying his hardest to become a behaviourist. Behaviourists insist that they have no minds; and, although their arguments do not seem to me to prove this modest contention, the fact that they accept such arguments does suggest that at any rate they have none to spare. Mr. Russell indeed admits that he has only been able to persuade himself that his mind, like Mrs. Easy's nurse's baby, is a very little one; and it may be doubted whether he will be able to persuade anyone else of this proposition. I need scarcely say, however, that Mr. Russell's arguments are not to be settled by cheap witticisms of this kind. Substantially his position is this. He is persuaded as a matter of method that both the self and its acts ought to be treated as logical constructions like points and instants, of course without prejudice to the possibility of their being something more than this. His old theory of judgment, and much that he has written about sensations and sense-data, will of course have to go if this position is to be worked out. In this article he is looking for a theory of judgment that shall fill the gap. Naturally the behaviourist view presents itself as a candidate, since behaviourists will have nothing to do with any factors the evidence for which is introspective. He therefore tests the behaviourist theory of judgment much as Cardinal Newman tested the XXXIX. Articles to see how much catholic truth they could be made to contain. He concludes that it is considerably less silly than it looks at first sight, that it contains important elements of truth, and that certain arguments against it which seem highly plausible will not bear scrutiny. Nevertheless he thinks that it breaks down over the empirical fact that there are genuine mental images, and that these at least are necessary for any theory of judgment that will fit the facts. His positive view seems to be that images are both necessary and sufficient to constitute propositions. Both these positions, and more especially the latter, seem to me highly doubtful. Verbal propositions have a meaning in terms of image propositions, and image propositions refer to facts other than themselves, which correspond to them in certain ways, if they be true. There are genuinely negative facts, but neither verbal nor image-propositions are among them; a negative sentence is a positive fact and so is the image proposition corresponding to a negative fact. This has led people (wrongly, as Mr. Russell tries to show) to attempt to analyse away *all* negative facts. Belief, as an act, is a feeling, or rather a class of feelings, associated with certain sets of images. Memory and expectation are special varieties of this feeling, and the difference between them is liable verbally to appear in the content of the proposition. Differences of tense do not really belong to content any more than differences of quality. It is impossible to criticise an elaborate and novel theory, dealing as does this with extremely fundamental points, at the end of a review. I hope to return to the subject in the near future.

There are a few misprints in the book. Two in Dean Rashdall's article make him say the exact opposite of what he evidently means; whilst Prof. Wildon Carr is made to speak of 'illuding' where he clearly means 'alluding'.

C. D. Broad.

Theophrastus and the Greek Physiological Psychology before Aristotle. By George Malcolm Stratton. London: George Allen & Unwin, Ltd.; New York: The Macmillan Company, 1917.

Theophrastus' work *De Sensibus* is a book of great interest as being the only continuous portion left to us of his great collection, in eighteen books, of *Opinions of the Physicists*, the source from which all the

doxographers drew their knowledge of the Greek philosophers from Thales to Plato and Democritus. The way had of course been prepared for Theophrastus by such reviews of earlier thought as Aristotle frequently prefixes to his statement of his own views. But Theophrastus appears to have gone much more into detail, and certainly he gives us much more detail in this book about the earliest attempts at psychology than Aristotle gives in the *De Anima* and the *Parva Naturalia*. His work is divided into two main parts—§§ 1-58 being concerned with the physiological and the sensory processes and §§ 59-91 with the objects of perception. In the first division of his work he classifies his predecessors according as they explained perception as due to similarity, or to contrast, between the sense-organ and its object. Parmenides, Empedocles, and Plato ascribe it to similarity; Anaxagoras and Heraclitus to contrast. Heraclitus, however, after being thus classified at the beginning of the treatise, is mentioned no further. On the other hand, an account is given of four thinkers not mentioned in the original summary—Alcmaeon and Cleidemus, who belonged to neither of the schools in question, Diogenes, who belonged to the school of similarity, and Democritus, who has elements of affinity with both schools. In the second part of the work, Theophrastus complains that Democritus and Plato are the only previous thinkers (Aristotle being left out of account as above criticism) who have given any detailed account of the objects of perception; of these two thinkers a relatively full account is given. Plato, Anaxagoras, and Diogenes occupy each about a ninth of the whole space, Empedocles a fifth, and Democritus a third. So far as we know, no early thinker of importance on these subjects is omitted. Throughout, criticism is clearly distinguished from, and preceded by, exposition. The exposition is clear, except where textual difficulties stand in the way, and the criticism is trenchant and in the main fair.

Though many passages of the work have been translated and commented on by Profs. Beare and Burnet, the book under review offers the first complete translation and commentary in English, and the thanks of all students of Greek philosophy are due to Prof. Stratton for his careful and valuable work. They are due in hardly a less degree to Prof. Taylor, who has assisted the editor by a detailed criticism, and a discussion of many of the more difficult passages. Where the editor has retained his own view against this criticism he has frequently printed Prof. Taylor's remarks in his notes, so that the reader has the advantage of two interpretations to choose between.

The introduction contains a useful summary, based partly on the *De Sensibus* itself, partly on Theophrastus' other works and on Priscianus' *Metaphrasis*, of Theophrastus' own views on perception; and a judicious appreciation of the method of exposition and of criticism in the *De Sensibus*. The text follows very closely that of Diels—that given in the *Vorsokratiker* for the expository passages, and that given in the *Doxographi* for the critical passages, which do not appear in the *Vorsokratiker*. The manuscripts are full of errors, and the emendatory instinct thus aroused has in some cases been given too free a rein; it would have been well if the editor had recurred to the manuscripts in such passages as the following, where their reading is, if not always as easy as that which has been substituted for it, at all events neither impossible nor improbable:—

§ 8, l. 12. The addition of *γίγνεσθαι δὲ ταῦτα* is unnecessary, if a comma be read after *ὕδατος*.

§ 9, l. *ἔξωθεν* may stand. External sounds will then be the ultimate and internal sound the proximate stimulus of hearing.

§ 20, 9. *φθείρειν* should be retained. The subject may be either 'the emanation' or 'Empedocles,' *φθείρειν* meaning in the latter case 'describe as being destroyed'.

§ 29, 7. The addition of *τῶν αἰσθητηρίων* is quite unnecessary.

§ 30, 10. *τῆς λεπτῆς ἀέρος* may stand, as a quotation from Anaxagoras.

§ 31, 8. *ἐκ τῶν εὐλόγων* is quite possible.

§ 35, 2. *οἷον οἱ ᾗ ὀφοι, χρώματα* may stand, though *τῶν μειζόνων* must be excised.

§ 49, 3, 7. *τό* should be retained where editors have written *τῷ*. The retention of a similar *τό* in § 91, 7 makes it unnecessary to suppose any hiatus there.

§ 54, 2. The addition of *ἀκτῖνα* appears unnecessary.

§ 68, 9. It seems quite possible to retain *θερμοῦ δὲ καὶ ψυχροῦ καὶ τῶν ἄλλων*.

§ 71, 5. *πικρᾶς* is not needed.

§ 75, 13. Some such term as *διαλλάττειν* can be supplied in thought without being inserted in the text.

In § 8, 2, Prof. Taylor's very probable emendation being accepted, no hiatus should be indicated.

The editor does not follow Diels's text slavishly, and in some cases his departure from it appears to be justified. There are certain passages where conjectural readings not adopted by the editor are preferable to the readings he adopts, *e.g.*, the following :—

§ 8, 9. *ἐπεὶ αὐξηθέν* (Usener).

§ 9, 3. *τῶν ἔσω ἦχων* (Schneider).

§ 25, 8. *τὼ κοίλω*. *Cf. Plac.* IV. 10, 2 (Stobaeus) *πάντα γὰρ τὰ κοῖλα ἠχεῖ*.

§ 26, 1. *ὀφθαλμοῖς*, *cf.* the datives in § 25, 7, 9, 10 and 26, 3.

§ 35, 7. *ὁμοιογένεσιν* may be conjectured.

§ 37, 7. The logic of the passage requires some such addition as that of *καίτοι* (Beare).

§ 39, 6. This passage is undoubtedly corrupt, and some emendation such as that suggested by Diels is necessary. Prof. Stratton's translation of *λεπτότατον* by 'too attenuated' is impossible.

§ 41, 8. Philippson's reading, which is printed in the text by the editor, is quite impossible, and Diels's *καὶ καθάπερ τῇ ὀσφρήσει κἂν τῇ ἀκοῇ* is much preferable. If the account already given of smell is thus being referred to, a comparison of this line with l. 3 shows that *μικροτέρου* should probably be read in the earlier line, as suggested by Diels.

§ 60, 5. The difficulties are removed by reading *ὁ λόγος*.

§ 61, 2. *τὰς ὀλσίας* appears to be necessary.

§ 81, 8. *ἠμέληκεν διασαφεῖν* may be conjectured.

§ 87, 7. Logic plainly requires either the omission of *μή* or the reading of *ἀνθιστάμενον* for *ἀντιμεθιστάμενον*. The translation takes no account of *μή*.

There is one general feature of the translation on which a word may be said. The translator has usually indicated by angular brackets the English expressions that have no corresponding words in the Greek. The expedient is a tempting one, but, as he himself implies, it is one which it is not worth while to carry through 'in stubborn consistency,' and it seems better to avoid it altogether. It disturbs the continuity of the impression ; and it suggests that the translator has not made up his mind whether the bracketed words are or are not a legitimate part of the translation. In the great majority of cases the words bracketed by Prof. Stratton are such as he would have been justified in regarding as quite necessary to bring out the meaning of the Greek.

The translation is in the main clear and accurate. There are occasional slips, *e.g.*, in § 21, 3, the translation of *κώδων* should be assimilated to that in § 9, 3 ('the bell of a trumpet') : in § 90, 10, *τὰ ὕδατα* should be 'rain' rather than 'water'. But such slips bear a small proportion to the size of the work, and are for the most part not important.

The commentary discusses fully and judiciously all the main difficulties of the work. A few passages may be remarked upon. In note 5, a doubt is expressed whether the 'symmetria' referred to in § 3, 6, is a due proportion of heat and cold or a correspondence with the object to be perceived. It appears clear that whatever be the use of *συμμετρία* by Theophrastus elsewhere, the first meaning alone is in place here. Again it is impossible to share the editor's feeling (n. 127) that 'it is almost too discerning in so naïve a psychology' as that of Diogenes 'to declare that vocal difficulties . . . are an important cause of mental inferiority'; surely no great degree of sophistication is needed to discern this. Again too much difficulty seems to be made of the fact that in § 55 Democritus is said to hold that we hear with the ear and not with the whole body, while in § 57 Theophrastus remarks that 'it is absurd . . . to say that sound permeates the entire body and . . . is spread to every nook and cranny, as though perception were due not to the ear but to the body entire'. Surely in the latter passage hearing with the whole body is not ascribed to Democritus as a doctrine held by him, but is put forward as the *reductio ad absurdum* of his doctrine. On § 79 *ad fin.* a note is badly needed to explain why the 'battlemented' and broken shape of the particles of things that are both white and rough should have been supposed to account for their throwing no shadow. Lastly it may be observed that in the difficult passage § 88, 5-7, the editor seems to be right in accepting Philippson's transposition of *πλεῖον* and *ἔλαττον*. To the present reviewer, at any rate, Prof. Taylor's defence of the traditional text does not carry conviction. And Prof. Stratton's interpretation of the two *λόγοι* in § 88, 8, as the propositions that a heavy object is one that is borne to an alien place with difficulty, a light one with ease, and that the body with more of kindred substance is heavy, the one with less, light, appears much the best interpretation.

W. D. Ross.

The Justification of the Good: An Essay in Moral Philosophy. By Vladimir Solovyof. Translated from the Russian by Natalie A. Duddington, M.A., with a note by Stephen Graham. London: Constable & Co., Ltd., 1918. Pp. lxiii, 475.

Readers of the recently translated dialogues of this eminent Russian thinker on *War, Progress, and the End of History* should welcome this issue in an English dress of a more systematic work on the whole range of the conduct of life, private and public. The translation is, in the main, admirably done, when allowance is made for two or three peculiarities which seem to show that English is not the native speech of the translators. The chief of these is that in the use or absence of the definite article with abstract nouns, French, and not English, idiom is almost always followed. This peculiarity is so marked that, but for the express declaration of the title-page, one would almost fancy that the rendering had been made through an intermediary French version. The frequent recurrence of compound adjectives formed on a German model, such as "ethically-religious," "individually-social," is also a mannerism which is unpleasant to our English taste, though Americans apparently do not object to it. But for these two singularities, and a few unusual equivalents for classical proper names, the book reads almost like an original work in our own language.

Space will not permit of anything like a full review of a work which covers the whole ground of the "practical" life. But I should like to commend Solovyof's book to all students of ethics and religion precisely because, while it has so much in common with a great deal of the best re-

cent British work in these fields, the writer's special point of view is often not quite that which is most familiar to ourselves. Thus such topics as Hedonistic or Naturalistic Ethics are treated on lines which are very much those of Green's *Prolegomena to Ethics*, a work apparently unknown to Solovyof, and the discussions of economic problems in the eighth chapter (one of the most suggestive) have a marked general affinity with Ruskin's treatment of the subject. But there is always, among the closest resemblances to Green and Ruskin, the note of subtle differences, due partly, one supposes, to the Russian nationality of the author, partly to the traditions of Eastern Christianity. The ascetic element in the moral life gets a prominence which seems a little strange to the Western moralist, who perhaps tends to an undue depreciation of the worth of "discipline"; the value of institutional religion is very strongly insisted on, and the eschatological hope of the ultimate "redemption" of the world of body itself is displayed as indispensable to any real "justification" of good. All this will strike most of the English readers who are in general sympathy with the author's views on Ethics as unusual and exaggerated, but for that very reason it is desirable that they should be led to ask themselves the question whether there is not something, both in eschatology and in institutionalism, which is fundamental in really spiritual morality and religion. If we are inclined to think that the traditions of the Eastern Church have led Solovyof into exaggeration in these matters, it is at least possible that our own very different traditions have led the followers of Green into an unduly low estimate of what Solovyof prizes so highly.

There is one very interesting point in the treatment of the elementary facts of conduct which fills the first five chapters on which I may perhaps make a remark. Solovyof finds the primitive roots of moral behaviour in three feelings, those of shame, pity, reverence, which prove to be the basis of our duties to ourselves, to our fellows, to God. It is characteristic in a writer who seems always uneasy in presence of the fact of sex that the feeling of shame or modesty in all its forms is declared to have a sexual origin; shame is the feeling that in some way our sexual life and all that pertains to it are unworthy of us. I do not propose to raise the questions whether this conviction is either common or justifiable, though it is obvious that both questions might demand very careful discussion. But I should like to point out that the linguistic evidence upon which Solovyof bases very far-reaching inferences is valueless. He makes it the main proof of the universality of the feeling that in several languages, Greek, Latin, Russian, French, German, the generative organs are commonly called the "shameful" part. (I might object against him that the expression is *not* usual in English.[1]) Now, in the case of three languages out of these five, Latin, French, German, it is manifest that the words appealed to, *pudenda*, *parties honteuses*, *Schamteil*, are mere translations of the Greek *αἰδοῖον*, and presumably the Russian word has the same source. The evidence is thus reduced to the single fact that in Greek the name for this part of the body is *αἰδοῖον*. But does *αἰδοῖον* mean the "shameful" part at all? It seems to be the neuter of the adjective *αἰδοῖος* used substantively, and it is safe to say that *αἰδοῖος* in Greek does not mean *αἰσχρός*. It is an epithet applied to "old men," to "maidens," and (by Plato) to Parmenides. Its real sense thus appears to be "deserving of respect," and *τὸ αἰδοῖον seems* to be called so, not because it is something of which the Greek felt ashamed, but—like an Archdeacon—because it is the "venerable" member. (It

[1] The corresponding English is "privy parts". Since we also say "Privy Council," it is obvious that the English adjective is not necessarily "dyslogistic".

would be "venerable," of course, because of its connexion with the perpetuation of the life of the kin from one generation to another.) Probably, then, the contention that a feeling that there is something degrading about sexuality is one of the roots of universal morality is based on nothing more than the mistranslation of a Greek word.

I should like to call special attention to the excellence of the chapters on the connexion of the moral problem with the economic (c. 7), the relations of morality and law (c. 8), and the moral significance of war (c. 9). Two thoughts in c. 7 specially appeal to myself the observation that Christianity and Socialism are necessarily incompatible, because Christians pity the rich, but Socialists envy them, and the striking suggestion that in a sound solution of "the economic problem" it will be recognised that the cultivation of the earth is a duty not only to ourselves and our fellows, but to the earth itself. Its "redemption" or οὗ ἕνεκα is precisely to be made by man's loving labour to "blossom like the rose".

A. E. Taylor.

The Problem of Space in Jewish Mediæval Philosophy. By Israel Isaac Efros, Ph.D. Columbia University Oriental Studies. Vol. xi. New York: Columbia University Press. London: Humphrey Milford.

The work of the Jewish philosophers of the Middle Ages has attracted attention in recent years, partly as a department of Jewish literature, partly because of the revival of interest in Mediæval Philosophy generally. As Syriac scholars had transmitted the heritage of Greek learning to the Arabs, so at a later time the Jews were the intermediaries, when the debt to Europe was repaid not without interest, although there was also a certain amount of direct contact between Arabs and Latins as there had been between Arabs and Greeks. Accordingly if we desire to know, how Greek and Arabic philosophy influenced Scholasticism, we must take the Jews into account. Besides acting as intermediaries, Jewish philosophers no doubt also made a contribution of their own, although it has not yet been determined with sufficient precision, to what extent they were original.

Unlike the work of Husik, which was reviewed in Mind, No. 105, the present volume is only concerned with a particular group of problems, those relating to space, so far as they appear in Jewish Mediæval Philosophy. Starting from Plato and Aristotle, Dr. Efros shows by quotations, how far their doctrines were accepted or rejected by the authors he is discussing. It is by no means easy to determine exactly, what Plato thought about space. His doctrine about it has to be gathered principally from the Timæus. And there he expresses himself with vagueness and hesitation, as though he had not worked out his theory to a satisfactory conclusion. Aristotle is more precise and more intelligible, but for that very reason more vulnerable. If Dr. Efros is right, Plato did not intend to identify matter and space, but differed from Aristotle in not holding, that space was terminated by the outermost celestial sphere. On the whole Jewish Mediæval thought agreed with Aristotle, although there are some instances to the contrary, *e.g.*, the practical identification of matter and space by Isaac Israeli, who is quoted (on p. 38) as saying, that 'tridimensionality is matter, and matter tridimensionality," and Abraham ibn Ezra's (1104-1167) adherence to the Atomism of the Mutakallimun. Gabirol,[1] a vigorous and original thinker, had a theory of his own about

[1] Solomon ibn Gabirol (1021-1058), Neoplatonist.

matter and space which was certainly not Aristotelian and was a refinement upon the pseudo-Platonic view of Isaac Israeli. He held, "that extensity is the form, which combines with the original undefined hylic matter". The most thorough-going opponent of Aristotle mentioned by the author is Hasdai Crescas.[1]

Among the special problems discussed in the book are the nature of empirical space, atomism, absolute space, the existence of void, and the meaning of infinity. The inevitable antinomies of Zeno of course recur to baffle the author no less than Saadya (892-942) and other Mediæval philosophers. According to Dr. Efros, the most valuable contribution of the philosophers he discusses to the theory of space consisted in their treatment of infinity. Aristotle had maintained, that space unlike time, though infinitely divisible, was finite. Maimonides (1135-1204), Narboni, Gersonides, and Hasdai Crescas between them worked out a theory of infinity, which Dr. Efros expounds as follows[2]: "What then does infinity mean? It represents a process that may be carried endlessly without destroying the object; just as finitude represents such a process that will ultimately reach a limit, the crossing of which would spell injury to the object. It is in this sense that we say matter is infinitely augmentable, meaning that we can enlarge and further enlarge a given magnitude of matter *ad infinitum*, without ever producing an infinite magnitude, because that would mean the loss of matter which is by nature limited and circumscribed. Indeed, it is absurd to believe that such an infinite will eventually be reached, because then the process will cease, infinity being unaugmentable, and the process will therefore be finite. Hence an infinite process presupposes finite results, and as one Jewish thinker cleverly remarked: Matter is infinitely finite. Similarly infinite divisibility denotes that the process of division may be carried on theoretically *ad infinitum*, without bringing about the loss of the object."

The following quotation given from Abrabanel[3] (p. 86) certainly shows, as Dr. Efros observes, "a strong note of modernity". "It is impossible to conceive the beginning of time without a pre-existent time. Also the limitation of the material world is inconceivable without a beyond-existing place. But this difficulty of conceiving temporal or spacial finitude is purely mental, and does not disprove real finitude. . . . But after a certain amount of reflexion the mind can correct this error arising from perception, and can rid itself of its acquired *habit*, and come to realize that reality is not absolutely conditioned by those relations." Abrabanel would have appreciated the "evolutionist theory of axioms" condemned by the late Prof. J. Cook Wilson.

On the whole it may be said, that Dr. Efros has produced a useful monograph upon a subject not readily accessible to the majority of readers interested in philosophy. The work would have been improved by a chronological table giving the dates of the Jewish authors reviewed. And it is impossible to decide, how far any particular author is original or not, without a fuller investigation of Arabic and later Greek philosophy than Dr. Efros appears to have made. He tells us a good deal, it is true, about the theological atomism of the Mutakallimun. But as is clear from de Boer's *Philosophy in Islam*, there were plenty of other types of Muhammadan philosophy besides. May not some of the Jewish divergences from Aristotelian orthodoxy have been influenced by Ghazzali, whom Dr. Efros does not even mention? Again it is impossible to estimate the permanent

[1] Hasdai Crescas (1340-1410), author of *Or Adonay*, who had a great influence on Spinoza.

[2] P. 114. [3] Don Isaac Abrabanel (1437-1509).

value of Mediæval theories of space, unless they are compared with the results of quite recent investigation. It is not enough to point out their obvious contrast with the views of Kant. No one would ever have expected them to foreshadow his Copernican revolution. But even a non-mathematician in dealing with the problems of infinity might be expected to show some acquaintance with the results of such authorities as Cantor and Dedekind and Bertrand Russell.

C. T. Harley Walker,
(*assisted by* Paul Philip Levertoff).

Rousseau and Romanticism. By Irving Babbitt, Professor of French Literature in Harvard University. Boston: Houghton, Mifflin & Co. Pp. xxiii, 426. 17s. net.

The author believes a true insight into reality to depend on a just treatment of the imagination. He remarks suggestively on the recentness of reflexion on the creative imagination as such, but fails to note that in Shakespeare himself the idea is quite definitely emphasised. His book might have been a very good one. He has very great knowledge of French literature, a knowledge with which I could not compete for a moment. If he had defined or distinguished his antithetic principles with philosophical insight, and had traced the decadence of which he complains with caution and precision among French romanticists and German votaries of Irony, we should have had good reason to thank him.

But as it is, he has picked up his "laws" uncritically; he has not distinguished them intelligibly; he has expanded his polemic into some of the worst and wildest literary criticism that it has ever been my painful duty to peruse. Here it only concerns us as the consequence of philosophical confusion.

His two laws he states in terms of Emerson. They are the law of man and the law of thing. In art and literature they correspond respectively to (*a*) humanism, classicism, ethical imagination, art that recognises a centre, a control, a conscience which is essentially negative—a veto, and (*β*) expansive imagination, romantic, naturalistic and scientific, uncentred, uncontrolled, conscienceless and unrestrained, Arcadian, amoral (this last is my term not his). And the thesis is that since Rousseau and Goethe's Werther the European imagination, determined largely by a reaction against pseudo-classicism and Cartesian mechanism (I daresay there is something in this), has been rushing down a steep place into chaos.

What are the two things contrasted?

The ethical or restrained imagination and the unrestrained uncentred imagination—classicism and naturalistic romanticism. Of course the student asks at once, but what of the beautiful imagination? Why go into another genus for your restraint, and bring in conscience, negation, and ethical purpose? Has beauty, then, no centre and no law? Obviously we are here confronted by mere philosophical inexperience.

And then the extravagances. On Werther and Tieck, Rousseau, and Chateaubriand, and plenty more, the author is clear, incisive, instructive. I did not know that Rousseau originated or at least employed the phrase 'l'art pour l'art'. I quite accept the fact from Prof. Babbitt. Only, there is not a word of Rousseau's political writings, and perhaps they are not quite in the picture. But we must remember that they obviously echo Spinoza, and I should have thought he was ethical and centralised enough for anybody. The story about Rousseau's children is far from well supported.

But outside this range, nearly all our great recent poets are drawn into

his wandering sermon by the author's quaint confusions. Goethe's *Faust* destroys the roots of the distinction between good and evil by equating the devil with the spirit of denial[1]; for the spirit of denial (veto) is the essence of conscience. Browning's magnificent "O lyric love ——," the dedication, and climax of the Introduction, in the *Ring and the Book*, is, if I can believe my eyes (p. 212), treated as spoken *by Caponsacchi*, and winning our sympathy *for him* by its "lyrical intensity" "though not of the highest type" of poetry. Blake, Shelley, Wordsworth, Victor Hugo, go down in the common ruin. And all because the critic does not understand how to look for positive beauty (he likes to call himself a positivist) on its own definite and determinate ground. A modest and sensitive critic might undoubtedly have something instructive to say about extravagance in the poets I have mentioned. F. W. H. Myers treats the problem with care and delicacy in relation to Shelley.[2] But to say that "Shelley has passages especially in his 'Adonais' that are on a high level!"[3]

BERNARD BOSANQUET.

Conscience and Fanaticism: An Essay on Moral Values. By GEORGE PITT-RIVERS. London: William Heinemann. Pp. xvi, 112.

The writer says he wishes to contribute "towards an understanding of the mental state or attitude we call fanaticism, for the purpose of guarding against the catastrophes it begets". But he discusses a good many other topics more or less relevant, including Moral Judgments and Obligation, Morality and Religion, the Laws of Suggestion, and the Nature of Valuation. If he does not claim to be a philosophical expert, Mr. Pitt-Rivers has pronounced opinions of his own, and is inclined to be dogmatic. It would not be very easy to reduce his opinions to a coherent whole.

The author denounces the appeal to conscience, the refuge of orthodox and fanatic alike, and vigorously repudiates the religious view of conscience. Conscience is not absolute, rests on variable grounds, and is a blending of several elements. A moral standard is needed, but Utility adequately supplies that, while the end is justifiably conceived as pleasure or happiness. In another place the expansion or realisation of the self seems to be suggested as the end. The writer, however, denies that pleasure is always the motive, though he does not explain how motives are to be appreciated unless it be by their consequences. He surprises us by calling truth an *a priori* and self-evident good, and seems to suppose that in no circumstances can deception be justified.

The discussion of values and valuation is interesting, if unconvincing. The instinctive and emotional elements which enter into valuations lend them no validity—a disappointing thing, since we are told that there are few people whose views are not chiefly emotional values. Mr. Pitt-Rivers would probably regard his theory of Cosmic Suggestion as his most original contribution to the problem of life. He distinguishes the conscious and the sub-conscious as two minds with different attributes—a very crude conception. The sub-conscious mind is in constant *rapport* with a vast psychic environment from which suggestions proceed. These prevail, for mass tells against the single mind. Suggestions from this source explain public opinion and mob-psychology, and are utilised in the successful appeals of demagogues and fanatics. As apparently the

[1] P. 360. [2] Ward's *English Poets*, vol. iv. [3] P. 358.

individual has very little power of controlling these 'cosmic suggestions,' the outlook for society appears to be depressing. One can only draw comfort from the thought, that reason plays a larger part in forming public opinion than the writer supposes.

G. G.

Philosophical Currents of the Present Day. By Dr. Ludwig Stein. Translated by Shishirkumar Maitra, Director, Indian Institute of Philosophy, Amalner. Vol. I. Published by the University of Calcutta, 1918. Pp. xi, 234.

A translation by a Hindu of a German history of philosophy, published in Calcutta in the middle of the great war, appears to be something of a portent. Does it mean that in these days only Hindus have the leisure to philosophise, and the means to produce cheaply books for which there is not likely to be a popular demand? Does it mean that though as heretofore only Germans will have the patience to compile histories of philosophy, their translators will henceforth come from India, and no longer from America? That might be something of a gain, for Mr. Maitra's translation is distinctly above the level of the ordinary American translation. On the other hand, it has many misprints, like most Indian-printed books. As for the quality of Dr. Stein's philosophic history, *Philosophische Strömungen der Gegenwart*, which is carried to 1908, it is not so preponderatingly Teutonic in its outlook as is usual in German histories, and has *e.g.*, a long chapter on Pragmatism, under the title 'The Neo-positivistic Movement'. For the rest it is of the Überweg-Heinze type, *i.e.*, full of names and information, and has the further merit of being readable. It is also about as trustworthy as other histories of philosophy. That, however, is not saying much. For history is always a *fable convenue*, more or less. It has always to select, and naturally selects what seemed important at the time to the historian. But a consequence is that whenever a *new* question crops up, as happens occasionally even in philosophy, not only does the historian show himself ludicrously incapable of placing it, but the old histories never enable one to trace it to its germs and first appearances. For these are precisely among the things that were passed over as unimportant. Another failing of the philosophic historian is to exaggerate the amount of logical connexion between the doctrines he catalogues. He tends to suppose that every later writer has read and pondered on all his predecessors and all their problems. Whereas he usually is acquainted only with a few of them, and can be original only for this reason. A philosophy, moreover, is essentially an individual product, and its comprehension demands the insight of a psychologist who can penetrate through its logical *camouflage* to the personal 'vision,' and the often accidental and ludicrously inadequate circumstances that set its author thinking. It is well therefore not to expect too much from any history of philosophy.

F. C. S. Schiller.

La Réforme de la Conscience. By P. Decoster. Bruxelles: M. Lamertin, 1919. Pp. 91.

There is something of the intensity and sincerity of the seer in this little book. It is an individual and striking piece of work, extremely well written, with its roots deep in the history of philosophy. There are three chapters. Ch. i. contains the negative thesis, developed in detail in ch. ii.; and the third chapter contains the positive doctrine. The impulse to philo-

sophy is the unrest due to the contrast between the free creation implied in action and the universal determinism to which reflexion leads. This unrest—inquietude—man attempts to get rid of by intellectual discipline. The history of philosophy shows this attempt in detail. It is M. Decoster's negative thesis that the attempt fails, and necessarily fails. Philosophy as an attempt at insight into ultimate reality is self-contradictory (ch. i.) and the history of philosophical systems (rapidly run through in ch. ii.) culminating in Hegel's Dialectic, which for M. Decoster is the only possible outcome and final type of a rationalist philosophy, shows the failure in detail. Nor can intellectual intuition succeed where rationalist philosophy has failed.

But, and here is the entrance to his positive thesis, if philosophy is not completely rationalistic, there is no alternative for it but *aventure*. And this means, a resolute acceptance of the *inquiétude* which gave rise to the rationalistic attempt, as the supreme reality, and a full submission to it, letting it take us whither it will. It will lead us to a discipline, not intellectual, but moral; in a word, it will bring about *la réforme de la conscience*, which M. Decoster, in harmony with Spinoza, identifies with the task of philosophy truly understood.

The problem of philosophy is no longer one of synthesising elements given to thought from outside (constructive synthesis) nor of seizing the nature of reality by an act of insight (speculative intuition): but one of synthesising *in the self* the various elements which belong to the self; entering into full possession not of an external reality, but of oneself, which can be possessed only by being created (intuition immanent to consciousness). Such an intuition is essentially action. "La notion même de réalité lui demeure étrangère" (73). To make intuition relative to any reality external to itself is "faire violence à la nature même de l'acte d'intuition" (74). Intuition so conceived is simply "la traduction en langue moderne de la connaissance du troisième genre de Spinoza" (75), though Spinoza, of course, was intellectualistic.

As M. Decoster describes it, the process seems at first sight curiously self-centred; in which the self stabilised by *joie* and driven onwards by *inquiétude*, gradually brings into a unity of interpenetration the various elements which at the start were but held loosely together. This impression, I think, is not entirely correct; for *joie* and *inquiétude* for M. Decoster are not mere subjective states but elements in genuine thought. We have, however, found his account of thought (*pensée*) not easy to follow. The main idea seems to be that while thought is essentially synthesis, the elements synthesised cannot be externally given, if the synthesis is to have intrinsic value, nor can they be given internally, if the synthesis is to have reference to any external reality. Insist that the synthesis is to have intrinsic value, cut off the reference to an external reality as the end toward which the synthesis is directed, and you are left with a synthesis of elements original to the self, resulting in genuine self-creation. The doctrine appears most clearly in the account of *joie* (pp. 69-70). Joy is the fundamental significant content of the self; inquietude the supreme reality in the self making for change. The interaction of the two (the expression is not exact) results in each taking on something of the character of the other (interpenetration of joy and inquietude) and in the formation of joys into a system (la participation des joies entre elles) exactly analogous in all points to the system of thought which philosophers have vainly endeavoured to erect. It is inquietude which connects joy with joy. Now "la joie, dès qu'elle est pénétrée d'inquiétude, participe de la pensée. Mieux encore: elle est pensée" (69). "L'inquiétude est le lien de nos joies; la joie, le véhicule de nos pensées" (68). "Les joies font corps avec la pensée dont elles sont les rayonnantes productions ou . . . les 'fulgurations'" (70).

Inquietude then is that in man which corresponds to the activity of free creative thought; the joys synthesised through it are profoundly modified by it; it itself becomes modified in the process. The synthesis of data into a system of knowledge, attempted by philosophy hitherto, is a failure; in its place we have a synthesis of the various elements of the self into a genuine self. All action, all science, are relative to this end. The philosophic problem is a moral problem.

The final stage is intuition, "l'acte par lequel la conscience conçoit et prolonge à l'infini la participation de ses éléments constitutifs" (73).

The synthesis of ourselves achieved, new problems open up. All existence is consciousness, bound together in certain relations by which at first man is enslaved. But by synthesing himself he frees himself from his bonds, and he can then endeavour to "substituer enfin, à la solidarité tyrannique des existences, la communication réfléchie des consciences" (89). Perhaps this final problem will be insoluble. But success or failure cannot affect what has been accomplished. The spirit of philosophy is neither optimistic nor pessimistic, but adventurous. There is no supreme being. Perfect existence is a contradiction in terms. "Il n'est d'éternité que celle que nous possédons pour l'avoir arrachée à une pensée infiniment riche, infiniment indifférente à ses richesses comme à nos besoins. Ce que n'obtiennent pas nos prières, notre audace le conquiert" (91).

What we hope to see developed by M. Decoster is a closer connexion of his whole doctrine with man in his social environment, and the clearer setting of the stage on which the whole drama is enacted. For the whole of the elements with which the present book deals are within self-consciousness. And the external world is resolutely taken as spiritual. But if so, what is the nature of its activity? If it is to be interpreted analogously to the self-conscious activity described in this book, then the extension and generalisation of the concepts of *inquiétude*, *joie*, and *pensée*, are urgently called for. Nor is this all. The process as described falls entirely within the individual's own consciousness and does not involve reference to society. This seems mainly due to the fact that M. Decoster is considering the process from its formal side; but if the formal (*i.e.*, essential) nature of the process of self-realisation does not involve any reference to the social environment, then the social environment must be accidental. The work would I think be improved by a closer reference to this point.

L. J. Russell.

Das Reisetagebuch eines Philosophen. By Count Hermann Keyserling. Munich and Leipzig, 1919. Pp. xxviii, 670.

This book is best described as a philosophic 'Pilgrim's Progress'. It is the diary of a globe-trotting philosopher who made the grand tour in the year 1913 visiting Ceylon, India, Singapore, China, Japan, Hawaii, and returning via America. The author, an Esthonian nobleman and a striking and brilliant figure at the international Congresses of Philosophy in the Golden Age before the War, after publishing a number of interesting books, which must evidently be regarded as experiments with Western thought, set out to explore the fabled wisdom of the East, in order to deepen his self-consciousness, in the hope, that, as he says, the way round the world would prove to be the shortest way to come to himself. So he determined to be impressionable, to keep his mind open to everything he saw and heard, and to reflect, and reflect on, the *genius loci* and the spirit of the people wherever he might chance to be, cultivating as far as possible the society of the natives and abstracting from the vulgarising grip in which

European civilisation now holds the East. It follows from this plan that the primary interest of Count Keyserling's book is neither geographical nor logical, but psychological. Neither scientific accuracy nor logical consistency are essentially his aim. The one is excluded by the shortness of his visits and the linguistic obstacles to free communcation of thought—for though Count Keyserling is a superb linguist, he can hardly (despite p. 45) have conversed with the representative thinkers of Ceylon, India, China, and Japan in their own tongues and without the treacherous aid of the interpreter—the other by the determination to *sympathise* with all the incongruous creeds he encountered. Hence, as the preface indicates, the book must be read as a psychological romance, for its suggestions and self-revelations, and not for its doctrines. 'Hic liber est in quo *reperit* sua dogmata quisque'—they must all be understood to be relative to the atmosphere which the author happens to be breathing. If read in this spirit, the book will be found highly enjoyable and full of suggestions and *aperçus* that are worth pondering; but it stands to reason that it offers insuperable obstacles to the serious-minded systematic critic, and easily eludes his clumsy efforts. The only thing for a reviewer to do is to select dicta which seem to him worth noting, and to indicate what conclusions the author finally came to when he returned home and came to himself.

I would draw attention therefore to the author's experiments with 'Raja-Yoga,' which repeatedly enabled him to rise to the contemplation of universals as real objects and so to confirm the Platonic Theory of Ideas (p. 240), his feelings of himself as a 'Proteus,' incarnating in various forms but never identifiable with his temporary impersonations (p. 291), his discussion of the cruelty instinct (p. 334), his meditation on the immortal in man (pp. 526-527), the connexion he traces between intellectualism and lack of creative personality (p. 426), his antithesis between the Westerners as doers and the Hindus as understanders (p. 594). All these reflexions are striking, though (or perhaps, because) one cannot wholly agree with him. Especially if one does not share one tacit assumption that runs through all his writing, *viz.*, that the metaphysical or ultimately real must be something *χωριστόν*, something apart and alien from the flux of becoming, attainable by a distinctive method of its own, which whether it be *a priori* reasoning, or (as seems more attractive) mystic ecstasy and concentrated meditation, has no point of likeness or contact with action and with the scientific and technical procedures by which men can in fact attain their ends and realise their ideals.

But for this presupposition it would not be so facilely evident to Count Keyserling that "there is no necessary connexion between the philosophic value of a conception and its significance for life" (p. 594); as it is, he keeps on relapsing into the absolute dualism of theory-*or*-practice; he must look up to the Hindu sage, though he seems more of a beast than of a god; he cannot look forward to a future in which science will not only have endowed man with power over nature but have enabled him to tame, control and remould himself nearer to the heart's desire. In spite of this prejudice, however, it is remarkable that when he gets back to his native soil he realises his oneness with a universal which is over-individual and super-national and yet 'no abstraction' (p. 648), and then decides to be a 'Boddhisatva,' that is a Buddha who declines to abandon the world and to enter Nirvana, so long as there is a single earth-bound soul to save. This surely is a way—a roundabout way, doubtless, but the only way possible, if one starts from Buddhist premisses—of confessing the *inferiority* of the ideal of contemplation to that of action. Unfortunately it hardly seems a practical way at present. For the social convulsions which have followed in the wake of the War throughout Eastern Europe and are threatening to spread westwards have left to members of the former ruling

classes little or no sphere of activity; and history shows that under conditions of collapsing civilisation the brightest and most cultured spirits are driven from action into contemplation, to the lasting loss of the world.

F. C. S. Schiller.

Introduzione allo studio delle opere di Benedetto Croce. Note Bibliografiche e Critiche. By Giovanni Castellano. Laterza e Figli, Bari, 1920.

This book is not very happily named, nor is it very admirable in its conception. It is evidently the work of an enthusiastic student zealous for the master's fame, but it reads like a publisher's catalogue followed by expansive laudatory press notices. At the same time it is an exceedingly valuable book and cannot but prove interesting for the positive information it provides concerning one of the foremost philosophers and a most notable leader of living thought. Benedetto Croce is a strange phenomenon. From his youth (his earliest publications were, we are told, in his seventeenth year) he has been pouring forth a stream of literary and philosophical work, and none of it is hack work We have not to select the good from a heap of rubbish. There is no rubbish. We may say that literally everything Croce writes is characteristic and original. It is curious also that he himself is not self-assertive, and it is clearly not a craving for publicity which makes him produce so many books. This is very beautifully shown in his *Contributo alla critica di me stesso* which he published privately in 1918, printing only one hundred copies for his friends. A French translation of this appeared in the *Revue de Métaphysique et de Morale* for Jan.-Feb., 1919. It exhibits him as almost shrinking from publicity and yet unable to resist the impulse to give his life and thought a literary expression which seems to flow as continuously as the life and thought expressed. I have my own theory. It is that Croce illustrates in himself, better than in any example he has given in his books, his æsthetic theory of expression. He is really a great artist, experiencing the continual need and overpowering impulse to find outward expression for his inner intuitions, and fortunately possessed of the material means for such expression in literary activity. If this be the true theory Croce will go on producing literary work so long as he lives and thinks, and the task Signor Castellano has set himself is a truly formidable one. He evidently contemplates new editions of his book keeping the record complete, and he looks forward also to the increasing fame which Croce's achievement is gaining. We may therefore be very grateful to him for what he has done and encourage him in what he still hopes to do. The book contains a very excellent portrait of the philosopher.

H. Wildon Carr.

Lo Spirito Evangelico di Roberto Ardigò. By Giovanni Marchesini. Bologna, 1919. Pp. 123.

A brief account of the life and ethical teaching of the distinguished Italian Positivist who died last year at the age of over ninety. Mr. Marchesini's brochure gives an eminently attractive picture of his master's personality, and calls attention to some close resemblances between the moral doctrines of Ardigò and the precepts of the Gospel. As a former priest of the Roman Church, Ardigò was naturally exposed for the greater part of a long life to the unremitting hostility of the Italian "clericals". Mr. Marchesini bears witness to the dignity and self-restraint with which he bore himself under coarse and violent attacks, as well as to the cheerful fortitude with which he supported a life of extreme poverty. It is gratifying to learn from the account of the old man's last

months that so honourable a career was not ended, as some of our newspapers reported, by suicide. The truth appears to be that Ardigò did once, some months before the end, make an unsuccessful attempt at suicide in the depression caused by the reverses to Italian arms and the fear, natural in an old and enfeebled man, of helplessness in the face of an Austrian occupation. Fortunately he was rescued in time and lived long enough to witness the national recovery. Much allowance must, no doubt, be made for an Italian writer exasperated by bitter "clerical" attacks on a venerated teacher, but I could wish that in his attitude both to the orthodox and to philosophical opponents of Positivism, Mr. Marchesini had copied the self-respecting courtesy which, as he tells us, was practised by Ardigò. All orthodox Christians are, after all, not "perfidious," nor all critics of Positivism charlatans or "pro-Germans". Mr. Marchesini seems to me a little too ready to doubt the good faith of those of us who do not regard religion as a mere "psychological fact" or cannot accept the Positivist theory of the methods and limits of science. With respect to the parallel he draws between the teachings of Ardigò and those of the Gospel, I would respectfully suggest that it rests a little too much on the assumption that the real Christ is the Christ of *Ecce Homo* rather than the Christ of the Evangelists. One may think that humanitarianism is a better thing than "theological morality," and that "love your neighbour" is a rule which needs nothing more to make it into a complete guide to right action. But it is unhistorical to forget that in the Gospel the *first* commandment is "love God". A "humanitarian" Christ is not precisely the Christ of the New Testament. And I think Mr. Marchesini a little unjust to "theological morality,"—though not altogether without excuse. Religion, he holds, infects morality with egoism, because it makes preoccupation with our personal salvation after death the centre of all our activity. I am sure that this conception of religion finds no warrant in the Gospels, and surely orthodox theology teaches expressly that it is a duty to love God for Himself alone. The arguments added to prove that the "irreligious" are morally on a higher level than the religious do not strike me as very cogent. It may be true that there is more prostitution among women who are both devout and very poor than among those who are both less devout and less destitute; but is the superior chastity of the latter due to their irreligiosity or to their freedom from want? Again, it may be true that there is more carnal sin among the ignorant and devout than among a less devout but more cultivated class. But, if so, are there not spiritual sins to which the *intellectuels* are prone? Even if all men and women were equally devout one would expect to find the necessitous led by want into faults from which the well-to-do are more immune, and it is dangerous to judge of the spiritual condition of a whole class simply by the frequency of one selected class of delinquencies. To parody a remark of Lewis Nettleship's, I have no doubt that there are less believing persons than myself who are better men than I am, but I am not convinced that it is their lack of belief which makes them better.

A. E. T.

Received also :—

Dr. Th. Ziehen, *Lehrbuch der Logik*, Bonn, A. Marcus & E. Webers, 1920, pp. viii. 866.

Wilfrid Lay, *The Child's Unconscious Mind*, London, Kegan Paul, Trench, Trubner & Co., 1919, pp. 329.

Walter S. Hunter, *General Psychology*, University of Chicago, 1919, pp. xiii, 351.

J. E. Turner, *An Examination of William James's Philosophy*, Oxford, Blackwell, 1919, pp. vii, 76.

Henry J. Watt, *The Foundations of Music*, Cambridge University Press, 1919, pp. xiii, 239.

Howard C. Warren, *Human Psychology*, Boston, Houghton, Mifflin & Co., 1919, pp. xvi, 460.

Alastair Shannon, *Morning Knowledge*, London, Longmans, Green & Co., 1920, xiii, 366.

Henry C. Link, *Employment Psychology*, New York, The Macmillan Co., 1919, pp. xii, 440.

C. T. H. Walker, *The Construction of the World in Terms of Fact and Value*, Oxford, Blackwell, 1919, pp. vii, 92.

John Handyside, *The Historical Method in Ethics and Other Essays*, Liverpool University Press ; London, Constable & Co., 1920, pp. xvi, 97.

Guido de Ruggiero, *La Filosofia Contemporanea : Germania, Francia, Inghilterra, Italia*, 2 vols., 2nd edizione, Bari, G. Laterza & Figli, 1920, pp. 271, 289.

Bernard Bosanquet, *Implication and Linear Inference*, London, Macmillan & Co., 1920, pp. ix, 180.

R. C. Lodge, *An Introduction to Modern Logic*, Minneapolis, The Perine Book Co., 1920, pp. xiv, 361.

Etienne Gilson, *Le Thomism, Introduction au Système de S. Thomas D'Aquin*, Strasbourg, A. Vixe Cie, 1919, pp. 174.

Chr. Zervos, *Un Philosophe Neoplatonicien du XI^e Siècle Michel Psellos*, Paris, Editions Ernest Leroux, 1920, pp. xvi, 269.

C. Stanford Read, *Military Psychiatry in Peace and War*, London, Lewis & Co., 1920, pp. 169.

John Leslie, *Nature and Super-Nature*, Aberdeen, Jolly & Sons, 1920, pp. 80.

Eriom Freundlich, *The Foundations of Einstein's Theory of Gravitation*, Cambridge University Press, 1920, pp. xvi, 61.

T. Percy Nunn, *Education : Its Data and First Principles* (The Modern Educator's Library), London, Edward Arnold, 1920, pp. vii, 224.

E. R. Murray and Henrietta Brown Smith, *The Child under Eight* (The Modern Educator's Library), London, Edward Arnold, 1919, pp. viii, 236.

Sophie Bryant, *Moral and Religious Education* (The Modern Educator's Library), London, Edward Arnold, 1920, pp. viii, 256.

Charles Gray Shaw, *The Ground and Goal of Human Life*, The New York University Press, 1919, pp. xii, 593.

George Willis, *The Philosophy of Speech*, London, George Allen & Unwin, 1919, pp. 256.

Douglas Clyde Macintosh, *Theology as an Empirical Science*, London, George Allen & Unwin, 1919, pp. xvi, 270.

G. W. F. Hegel, *The Philosophy of Fine Art*, translated, with notes, by F. P. B. Osmaston, 4 vols., London, G. Bell & Sons, 1920, pp. xxii, 405 ; xiii, 401 ; xv, 430 ; xix, 356.

W. B. Pillsbury, *The Psychology of Nationality and Internationalism*, New York, London, D. Appleton & Co., 1919, pp. ix, 314.

W. Powell, *The Infinite Attributes of God*, London, Arthur Stockwell, pp. xxvii, 220.

Henry C. Link, *Employment Psychology*, New York, Macmillan Co., 1919, pp. xii, 440.

Joseph Alexander Leighton, *The Field of Philosophy*, Columbus, Ohio, R. G. Adams & Co., 1919, pp. xii, 485.

IX.—PHILOSOPHICAL PERIODICALS.

Philosophical Review. Vol. xxviii., No. 5. **A. Lalande.** 'Philosophy in France, 1918.' [Discusses works on logic (Goblot); on religious and pathological psychology, etc., motived by the war (Truc, Segond, Gaultier, Dumas, de Lanessan, Combes); and on the history of philosophy (Milhaud, Durkheim, Robin, Delacroix, Bouglé, Moustoxidi, Metzger). Outlines the careers and work of Lachelier and Milhaud.] **H. H. Parkhurst.** 'Platonic Pluralism in Aesthetics.' [Argues for a radical pluralism of subjective universes with (as necessary correlate to this doctrine) a monistic attitude toward the objective. The artist's function, though different from that of the man of science, is thus no less essential; he discovers what is open to him alone to discover; and his obligation is to communicate it (as Flaubert said) in the one perfect rendering.] **G. W. Cunningham.** 'On Nietzsche's Doctrine of the Will to Power.' [We may grant (though it is matter of dispute) that Nietzsche defined fullness of life in qualitative terms as organisation. Even so he is involved in self-contradiction: for he emphasises the struggle of organisation at the expense of its other aspect of harmony. The brotherhood of man is a better interpretation of the will to power than is Nietzsche's superman.] **H. Neumann.** 'Manichaean Tendencies in the History of Philosophy.' [Traces of Manichaeanism are found both in ancient (Plato and his successors) and in mediæval thought (Augustine). In modern philosophy they abound, for the reason that Manichaeanism permits the ethical character of the Deity to be saved as it cannot be if God is accounted all-powerful.] Reviews of Books. Summaries of Articles. Notes.

Psychological Review. Vol. xxvi., No. 5. **A. P. Weiss.** 'The Mind and the Man-within.' [Human behaviour is determined by nervous function; but as we have no sense-organs whose adequate stimulus is nervous function, we cannot explicate the conditions of the relationship between environment and behaviour. Hence psychology has had recourse to personification: soul or spirit, ego or self, mind or consciousness.] **H. Carr.** 'Length of Time Interval in Successive Association.' [Experiments with rats (alternation-problem) show that an associative nexus can be established over a period of 35 sec.; there is no evidence that rate of learning is a function of interval. Of the two possible explanations by memory-survival and direct connexion, the author inclines to the latter.] **I. Mitchell, I. R. Rosanoff, A. J. Rosanoff.** 'A Study of Association in Negro Children.' [Negro children are inferior to white, though there is overlapping; admixture of white blood does not increase mental capacity; negro children depart farther than white from the normal adult associational standard.] 'Psychological Parerga from the Laboratory of McLean Hospital.' **E. S. Abbot, F. L. Wells.** 'i. Psychogalvanism in the Observation of Stuporous Conditions.' [Perceptive processes in manic-depressive stupor are but slightly lengthened; associations are formed about as rapidly as in health.] **F. L. Wells.** 'ii. Psychotic Performance

in Cancellation and Directions Tests.' [The more complicated or 'synthetic' tests are the better for separating normal and pathological subjects.] **F. L. Wells.** 'iii. Association Type and Personality.' [If we may judge by clinical record of the test, its fidelity to type, and its inter-correlations, the relation (though less simple than supposed by Jung, Pfister, and Ferenczi) is probably not too complex for formulation.] **F. L. Wells.** 'iv. Autistic Mechanisms in Association Reaction.' [The pathological breaking-through of autistic trends into consciousness may set up an attitude of self-reference (egocentric-predicate reaction) or may simply displace the trends of realistic thinking (scattered ideation).] **F. L. Wells.** 'v. Experiments concerning the Threshold of Conscious Learning.' [Experiments by modified technique of Dodge and Benedict. Verbal response and anticipatory key-response apparently indicate two partly dissociated sorts of knowledge, which may move at different rates and in different directions with regard to the conscious threshold.] **S. C. Pepper.** 'Changes of Appreciation for Colour Combinations.' [The greater the observer's experience, the higher is the average of his æsthetic judgment, the greater his consistency, and the less the influence on him of association.] **C. E. Cory.** 'Patience Worth.' [Brief characterisation of the coconscious personalities of Mrs. Curran, the thought-self (Patience Worth) and the every-day, active self. The schism was occasioned, though probably not caused, by some spiritistic efforts.] —Vol. xxvi., No. 6. **G. A. de Laguna.** 'Emotion and Perception from the Behaviourist Standpoint.' [Behaviourism can, as pragmatism and neo-realism do not, take account of the significant differences between emotion and perception. In so far as a stimulus calls into play a specific type of response, belonging to a single genetic and functional system, it possesses emotive quality; in so far as it calls into play an attentive postponement of response, it arouses cognitive awareness and possesses perceptive quality.] **P. W. Cobb.** 'Dark-adaptation with Especial Reference to the Problems of Night-flying.' [If dark-adaptation is disturbed by a standard exposure to light, the time of recovery (to the point of distinguishing a test-object of standard brightness) is a function both of the limit of vision (absolute threshold) in dark-adaptation and of the individual's rate of recovery: both are variables. Two physiological mechanisms may be involved. The relation of the behaviour of dark-adaptation to sensitivity for shade-difference in high illumination is not clear.—Before a test can be formulated, we must have more photometric knowledge of the conditions of night-flying.] **G. H. Thomson.** 'A Direct Deduction of the Constant Process Used in the Method of Right and Wrong Cases.' [Traces the historical development of the process; shows that Urban's correction of Müller's weights is justified; deduces the process from first principles.] **H. A. Carr, A. S. Freeman.** 'Time Relationships in the Formation of Associations.' [Experiments with rats show that successive stimulation (interval of 1 sec.) is more effective for association than simultaneous stimulation, and that the formation of a backward association of stimulus and motor response is exceedingly difficult, if not impossible. So far as published results allow of comparison, there is thus a marked difference between animal and human subjects.] **G. M. Stratton.** 'Retroactive hypermnesia and Other Emotional Effects on Memory.' [Deals especially with instances of retroactive hypermnesia, occurring when the crisis came without warning, and not referrible to frequent review of the experience. Within certain limits of intensity an emotion apparently vivifies backward or forward, and goes behind overt imagery to psychophysical dispositions or traces.]

Archives de Psychologie. Tome xvii., No. 2. **J. Fontègne et E. Solari.** 'Le Travail de la téléphoniste: essai de psychologie profession-

nelle.' [The combined result of eight tests (memory, attention, card-sorting, aiming, reaction) correlates well with the judgment of the officials ($r = 0{\cdot}698$). The failure of certain motor tests shows that the special ability required depends rather on intellectual than on physical endowments. The authors add a general discussion of vocational psychology.] Recueil de Faits: Documents et Discussions. **H. Reverdin.** 'Petite note sur un très petit magicien.' [Imitative 'magic'—finding beads on a path—on the part of a boy of 3 years 4 months.] **E. Reymond.** 'Le relâchement musculaire.' [Recommends muscular relaxation as a remedy for certain physical (cough, constipation, etc.) and emotional disturbances.] **C. Werner.** 'XIIIme Réunion des Philosophes de la Suisse Romande, Lausanne, 16 Juin, 1918.' [E. Guillaume on the theory of relativity.] Bibliographie. Nécrologie. [E. Yung, P. Dubois, E. Abramowski.] Notes Diverses.

ZEITSCHRIFT F. PSYCHOLOGIE. Bd. lxxxi., Heft 4, bis 6. **E. Kueppers.** 'Ueber die Deutung der plethysmographischen Kurve.' [Lehmann's arm-plethysmograph may be relied upon for changes of volume, though not for respiration and pulse. There are, however, only three assured types of the curve of volume: the typical depression consequent upon any noticed stimulus, the curve of tension, and the curve accompanying reflexion (*Besinnen*). Changes of volume are therefore of biological significance, and must be correlated with other peripheral expressions of mental activity (pupil, respiration, bodily attitude); they indicate acts (momentary attention) or states (expectant tension, steady thought with a definite object) of adaptation (*Einstellung*).] **C. Buehler.** 'Ueber die Prozesse der Satzbildung.' [After a discussion of general factors (associative, grammatical, idiomatic) the writer takes up in order Paul's seven schemata of sentence-construction, and illustrates them from her experimental data. On the side of theory she shows that neither Paul's synthetic nor Wundt's analytic principle is psychologically adequate.] **H. J. F. W. Brugmans.** 'Die Verlegenheit: Ihre Erscheinungen und ihr konstitutioneller Grund.' [Describes bashfulness as an emotional, social, and (to the sufferer) insufficiently motivated state; traces the modifications of character which it brings in its train, and the causes which determine its appearance; criticises the views of Dugas, Hartenberg, and Dupuis regarding its predispositional or connate basis. Perhaps a highly sensitive social ego is responsible. A constructive paper is promised.] Literaturbericht.—Bd. lxxxii., Heft 1 u. 2. **P. Meyer.** 'Weitere Versuche über die Reproduktion räumlicher Lagen früher wahrgenommener Figuren.' [Continuation of experiments noticed in MIND, xxiii., 314. The normal exposure is still, under more strict conditions, preferred; objects in the lower part of the field attract attention; there is a tendency to symmetrical localisation.] **P. Wingender.** 'Beiträge zur Lehre von den geometrisch-optischen Täuschungen.' [Several of the standard figures are exposed in two phases: first, the main lines only are presented, and then the secondary (illusion) lines are flashed in and out. The nervous apparatus by which we cognise the illusory changes in the main lines show a marked inertia; the critical velocity (lower limit of alternate presence and absence of secondary lines with steady persistence of illusion) is about 0·25 sec. The same critical velocity is found for the tridimensional apprehension of stereoscopic figures. No theory is attempted.] **A. Pick.** 'Ueber Gedankenkontamination.' [Stenographic record of examination of a paralytic, which shows contamination of thought.] **H. Berger.** 'Ueber die Energieumsatz im menschlichen Gehirn.' [Calculates tentatively that the total expenditure of energy in the cortex is 160 mkg. in the 1 min., and the transformation into psychical

energy during mental work is 20 mkg. in the 1 min.] **K. Buehler.** 'Eine Bemerkung zu der Diskussion über die Psychologie des Denkens.' [Critique of Henning.] Literaturbericht.—Bd. lxxxii., Heft 3 u. 4. **E. Kaila.** 'Versuch einer empiristischen Erklärung der Tiefenlokalisation von Doppelbildern.' [Seeks to explain the normal localisation of double images (their localisation at the distance of the object) on the principle that sensory complexes which have no distinguishing psychical character, but whose physiological correlates are spatially differentiated, may on this account belong to diverse association-systems and operate differently as motives to reproduction. The monocular depth-values assigned to the retinas by Hering as congenital characters thus appear as anomalous special cases of the normal (and primary) binocular localisation of double images. An Appendix discusses the views of Jaensch, and attempts to give them an empiristic turn.] **H. Werner.** 'Rhythmik, eine mehrdeutige Gestaltenverkettung: Eine phänomenologische Studie.' [There may be temporal repetition without rhythm, and also rhythm without temporal repetition, since a triadic unit is already rhythmical. The phenomenological essence of temporal rhythm is a multivalent (at least a bivalent) concatenation of forms: two forms are so interlocked that each element is embedded in the other, and, in part, predetermined by the other. What holds of temporal holds also of spatial rhythm (visual forms simultaneously presented).] **H. Henning.** 'Assoziationslehre und neuere Denkpsychologie.' [Reply to Bühler.] Literaturbericht.

"Scientia" (Rivista Di Scienza). Series ii. Vol. xxvi. October, 1919. **H. Shapley.** 'Star clusters and the structure of the Universe.' [A review of the more fundamental recent results derived from the light-curves of stars, and largely the work of the author.] **A. Palatini.** 'La teoria di relatività nel suo sviluppo storico. Parte ii^{a}, La relatività generale.' **A. Meillet.** 'La langue et l'écriture.' [A further development beyond the recent articles of Flinders Petrie and Moret.] **C. Bresciani-Turroni.** 'Ce qu'aurait dû être la 'mitteleuropa'.' **F. J. C. Hearnshaw.** 'La question de l'Islam à la suite de la guerre.' [The author favours an extreme Imperialist view which appears to bring in its train, especially in Persia, Syria, and Mesopotamia, more troubles than it can rectify.] Critical Note. **F. Savorgnan.** 'Nouvelles contributions à l'étude des relations statistiques,' dealing with the work of C. Gini. Book reviews (general). **A. Michel.** On the 'Traité de logique' of E. Goblot. **G. Scorge.** A review of six mathematical works dealing with diverse branches of the subject: (1) E. L. Ince, misspelt as Juce, on a Course of Descriptive Geometry and Photogrammetry for the Mathematical Laboratory; (2) D. Gibb, on a Course of Interpolation and Numerical Integration; (3) A. W. Conway's treatise on Relativity; (4) G. A. Carse and G. Shearer's Course on Fourier Analysis and Periodogram Analysis; (5) H. Bell's Course on Spherical Triangles, and (6) L. R. Ford's introduction to Automorphic Functions These works are all associated with the Edinburgh Mathematical Laboratory. **A. Boutaric.** Reviews of works on Geodesy and Crystals; **B. L. Vanzetti,** of a treatise on Chemistry; **F. Bottazzi,** of E. H. Starling's Linacre lecture; **J. A. Thomson,** of D'Arcy Thompson's Growth and Form; **C. Bandouin,** of Baldwin's Treatise on Reality, and others. Review of Reviews. Chronicle. French translations of Articles. November, 1919. **H. Shapley.** 'Star Clusters and the Structure of the Universe. Globular Clusters as Cosmic Units.' [This follows naturally on the previous article.] **E. Rignano.** 'Pathologie du raisonnement. I.: L'incohérence et l'illogicité des rêves.' **E. Lattes.** 'Per la soluziona dell' enimma etrusco' **G. Bourgir.** 'La question du Danube.' [A plea that the League of Nations should make the Danube navigable and capable

of use by all the nations concerned, as a great work of peace.] Book reviews. **G. Loria**, of Picard's Treatise on Analysis and its Relation to Various Sciences; **A. Boutaric**, of Mugnet's Radioactivity and Pomey's Theoretical Electricity; **B. L. Vanzetti**, of A. W. Stewart's two recent works on Advances in Chemistry; **J. A. Thomson**, of Perrier's *La Vie en action;* **Ch. Bandouin**, of Ellis' *Genius of England*, and Toulouse's *Pour penser et agir;* **R. Mounier**, of two works on Anthropology; **A. Mariotti**, of two works in Greek by A. M. Andreadis; **C. D. Burns**, of Wilkinson's *Government and the War*, and Burgess' *The Function of Socialisation in Social Evolution;* **G. Stepanow**, of Platonow's Russian History. Review of Reviews. Chronicle. December, 1919. **A. Favaro.** 'Il posto di Leonardo nella storia delle scienze.' [The author demonstrates the outstanding character of Leonardo as a master of science, although not the founder of a school to carry on his work.] **E. L. Bouvier.** 'Sur l'origine et les modifications de l'instinct des Hyménoptères paralyseurs.' [The article deals with the instinct of Hymenoptera which paralyse other insects with a view to their use as food for their progeny.] **E. Rignano.** 'Pathologie du raisonnement, II. Fous cohérents et illogiques par monoaffectivisme.' [The continuation of the preceding article. A third part is yet to appear.] **Ch. Seignobos.** 'Le passé et l'avener de l'Italie.' **G. H. Knibbs.** 'The Problems of Population, Food Supply and Migration.' Book reviews. **G. Loria**, of Bôcher's treatise on Strum's Methods and Modern Development; **A. Mieli**, of works relating to Chemistry and Surgery from a Historical Standpoint; **B. L. Vanzetti**, of Copaun's Introduction to Chemistry; **F. Bottazzi**, of E. J. Russell's *Soil Conditions and Plant Growth;* **J. A. Thomson**, of Loeb's *Forced Movements, Tropisms, and Animal Conduct;* **G. L. Duprot**, of Kaploun's *Psychologic générale, tirée de l' étude du rêve;* **Ch. Bandouin**, of Mercier's *Treatise on Insanity;* **A. Mariotti**, of Chapman's *Outlines of Political Economy;* **C. D. Burns**, of Cunningham's *The Common Weal;* **J. P. Lafitte**, of Gsell's *Ancient History of Northern Africa;* **E. Rota**, of Richard's *Conflict of National Autonomy and Imperialism*; the two last mentioned are French works. Review of Reviews. Chronicle.

X.—NOTE.

PRIZE IN PSYCHOPHYSICS.

The prize of $100 offered in 1914 for the best paper on the "Availability of Pearson's Formulæ for Psychophysics" (Mind, N.S., xxiii., 318 f.) has been awarded to Dr. Godfrey H. Thomson, Armstrong College, Newcastle-upon-Tyne, for a paper entitled "On the Application of Pearson's Methods of Curve-Fitting to the Problems of Psychophysics, especially to the Data of Urban's Experiments on Lifted Weights: in four Parts, together with Part v., On the Use of Compound Curves in the Analysis of Heterogeneous Material, and Part vi., On an Outline of an Attempt to Make a Generalised Psychometric Function".

E. B. Titchener.

New Series. No. 115.] [July, 1920.

257

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—THE IMPORTANCE OF THE SENSORY ATTRIBUTE OF ORDER.

By H. J. Watt.

1. The Attribute as Such.

The attribute of order seems to be a most important feature of sensory experience. I have endeavoured for some time to show what can be done with its help towards the elucidation of the elements and complexities of the senses.[1] It seems worth while to display the significance of this attribute in a broader manner. In fact the interests of psychology and of epistemology (which falls largely, if not wholly, within the range of psychology) call for as broad a treatment as possible.

Let me first briefly state the nature and function of sensory order. It is a useful procedure in psychology to compare data of our various senses with one another so that we may, if possible, bring them under general terms of description, and thereby co-ordinate their variations exhaustively. We find of course that ground for this work has been well prepared by our predecessors. But the results they obtained are not such as could have been expected to be entirely convincing either to them or to us. At the best they seem inconclusive and fragmentary. The attributes we find in commonest acceptance are quality and intensity. There are not many psychologists now who would refuse to add to these an

[1] *Cf. The Psychology of Sound*, Cambridge, 1917, and papers in *The British Journal of Psychology*.

attribute of extensity, although most of them might decline to acknowledge its presence in every sensation. But I do not wish to enter into a discussion of the question whether any attribute of sensation must belong to all kinds of sensation once it is admitted as fundamental for any one sensation or sense.[1]

These three attributes may be said to be plainly evident on the face of (at least some) sensations. The probable reason why the attribute of order has not passed from the stage of latent or everyday (conceptual) usage to the precision of scientific objectivity is its lack of such clean-cut simplicity. We find an order of "points" in the visual field, an order of touches on the fingers, an order of tones in the musical scale, an order of colours in the spectrum, and so on; but these orders are not very obviously similar to one another. These systems of colours and of tones seem to belong together as qualities, while the others are clearly systems of localisations.

But why be concerned about such lack of unity, one might ask? May not any group of things form the basis of an orderly system? Surely the order of the system, on whatever basis of sensation (or of anything else) it may rest, and as constructed, is of conceptual origin. The "stuff" of the objects in question presents them in some sort of sequence or series, but our concepts label them with their own orders.

There can be no doubt that this latter process of labelling does occur: for example, in the case of the spectral colours. The local differentiation of the spectral lines of interference helps this procedure greatly, of course. Whether a purely qualitative group of differences could be conceptually ordered, apart from any correlative ordinal series, would form an interesting problem. Good examples for this problem lie to hand in the smells, the tastes, and the colours (especially if from the last of these we abstract the possible differences of "density,"[2] putting up only the six primaries white, black, yellow, blue, green, red, all of equal brightness). The question would then be: does the stuff of these differences give any basis for preferring one scheme of arrangement to any other? Or, is not an ordinal system conceptually inapplicable to them, except in a perfectly arbitrary manner?

Our present interest, however, begins at the opposite extreme. Namely: there are systems of objective differences

[1] For these and other questions I must refer the reader to my previous papers.

[2] À la Brentano, *Untersuchungen zur Sinnes-psychologie*.

whose ordering is neither dependent on caprice of the intellect nor on any (ordinal) system with which these differences may be objectively correlated, but is entirely (and objectively) inherent in them. Some of these systems are presented without any other variant (such as quality or intensity) in their members (not as between systems, but within any single system) than this inherent ordinal one. In so far as these systems belong to the senses, and taken in their simplest forms, they constitute the range of variation of the ordinal attribute as such. We find them in all sensory localisations and positions and in the pitches of sounds. I have pointed out elsewhere that ordinal differentiation is the common feature of these three kinds of sensory variants. It has been a fundamental error of previous psychological theory to attempt to analyse sensations on the assumption that the localisation that appears in the majority of the senses in some form or other is either a primary and simple variant or is a product of the combination of qualitative and intensive differences. These two assumptions characterise what are known as the nativistic and genetic theories of space perception. The nativistic theory is correct in so far as it denies the derivation of space from any attribute that is not essentially ordinal, in which sense the genetic theory is quite untenable. But localisation seems to be genetic in origin in so far as it is not an attribute of any elementary sensation but supervenes upon a certain synthesis or integration of these elements. It seems most probable to me that we can give the name of localisation only to that co-ordination of the ordinal systems of the different senses that is brought about by the similar determination of these senses by the physical objects that stimulate them. Or to reverse the statement: space is the name for a certain system of correlations between the (or some of the) ordinal differences of the various senses. In its sensory form we find this system already present when we begin any sort of conceptual activity. It is not itself, however, a conceptual ordinal system, as is the space of any form of (mathematical) thought. The ordinal system of sensory space must be prior, both in the individual and in general development, to any form of thought.

It is a corollary upon this fixation of the status of space that there may be ordinal systems of sense that are not spatial. This seems to be realised in ourselves only in the case of hearing, where the series of pitches forms a single dimension that is free of any sort of direct correlation with the ordinal systems of the other senses. It is a dimension to itself; every simple or pure tone of a definite number of

vibrations lies round about one and only one point of the series, and the series is a continuity from lowest tone to highest tone. All sounds have, of course, besides, some sort of spatial localisation, which they obtain through the combined functions of the two ears. The foundation of this (spatial) correlation is necessarily, like the essence of pitch, ordinal. The difference is that the ordinal basis of it is independent of ("transverse" to) the dimension that constitutes pitch. And this transverse dimension is really correlated with the ordinal dimensions of the other senses.

In so far as any tone (or sound) is accurately localised, it stands in a system of four dimensions, namely, the three dimensions of space and the dimension of pitch. Thus the mysterious fourth dimension is realised in our experience in a very simple and inevitable way. The only blemish in the example is that sound of itself (or purely auditorily) is probably localised not in three spatial dimensions, but only in one, namely, in the transverse line of orders given by the two ears. But the case would hold if we granted sound the localisation that pertains to its source in the visual field. The interest of the matter is, of course, theoretical or speculative, not practical. The material organisation of the world may conceivably make it impossible to find anything that is qualified by four, and not less than four (such)[1] lines of ordinal variation. The upper limit may be three. But in our sensory experience we do find present more than three lines of ordinal variation, namely, for one instance, three dimensions of space and one of pitch. As far as these are considered merely as forms of experience and apart from their real dependence upon physical variants, they set no limitation upon one another. Therefore, from the point of view of sensory experience any number of dimensions is conceivable in connexion with one and the same sensory quality. At the most, however, only five seem to be actually found, namely, one of pitch, three of space, and one of time. All these are essentially ordinal.

A second dimension of pitch is quite conceivable, although there is not a trace of it in our hearing actually. How it might be realised, we cannot tell. But the actual basis of our third dimension of vision (stereoscopy) shows us that the range of possibilities is open and large. Each eye yields us only two dimensions: the lateral disparity of the images of the two eyes gives us solidity, which is thus realised without the use of a solid mass of physiological receptors. For all

[1] I call them "systemic" in distinction from temporal order

we know a second dimension of pitch might be realisable in ourselves, if we could procure the necessary physical variations required for, say, a pitch disparity of the two ears. But this sort of speculation is perhaps unprofitable.

The articular sense or the so-called sense of active touch also gives us an ordinal manifold of two, if not of three, dimensions. The differences appreciable in the different relative positions of the two limbs that meet in a joint, it is true, are not usually described as ordinal but as qualitative. But that classification seems to me to be certainly wrong. In the present connexion this sense is of interest only because its ordinal differences are not usually said to be spatial or localisational, but to be differences of position. Thus they form, in a manner, a companion to the pitch series and confirm the need for abstracting the ordinal variation from that of localisation for the purposes of the ultimate analysis and reconstruction of sense.

The study of the sensory attribute of order is, as I have variously tried to show, merely the foundation of an indefinite process of study by which the senses seem willing to be shuffled into a complete parallel with one another, and by which thereafter all the other cognitive functions seem likely to be much more intelligible than they have been hitherto. In the following pages I wish to give some account of these changes of outlook, especially towards the cognitive group. The former I have already pursued in considerable detail. But that thoroughness can be attained only for portions of the vast field in question and even then at best only in a temporarily adequate way. A sketch of portions of the field that are based on an inadequate survey can have value only as a rough guide or plan of approach. Some problems will doubtless withstand the effort to penetrate their obscurity, especially those of the qualitative differences of vision and still more of smell.[1]

The way in which the attribute of order brings the senses into conformity with one another may be illustrated by the case of hearing. The attributes are the result of the comparative analysis of the simplest elements or particles of sensation. Having brought these into a probable general agreement we should naturally expect to find that this agreement will extend to the simpler complexities of sensation. In the sense in which we are most keenly expert, namely, in vision, we find prominent a group of complexities of which

[1] A very interesting arrangement of smell qualities has recently been proposed by R. Henning.

distance is probably one of the simplest, other varieties being line, mass, surface, outline, and forms of all kinds. Another prominent group adds to all these the feature of motion. It is not difficult to state a general relation between these complexes and the variable attributes that appear in their parts. When we turn to hearing to seek a parallel to these, we must remember that we have established in uniaural hearing only a single dimension of pitch orders and that consequently all pitch forms and motions can be only of one dimension. In the transverse dimensions of auditory orders that the two ears mobilise for us we may similarly look for spatial forms and motions of only one dimension. And this is approximately all that the direct localisational capacity of binaural hearing affords.

The forms of pitch are found in the volumes of sounds (especially of tones) and in the intervals and chords of groups of tones. Their motions appear in the melodies of successive tones. The same fine sense of proportion that we find in ourselves for the proportions of visual distances and lines appears again in our familiar delicacy of discrimination of intervals—which are the proportions of auditory volumes (or pitch lines). It is of the greatest importance for the theoretical foundations of music that these things should be worked out in the finest detail. But it would be impossible to sketch them intelligently here.[1]

In the sense of vision a complication of the greatest importance appears which by a peculiar interlacing of two visual fields adds a third dimension to vision. This new dimension is not the result of any sort of cognitive correlation of the contributory fields; it is a sensory fact, as much visible as is either of the primary dimensions of a single field. This fact is really undeniable by anyone who has carefully considered the simpler aspects of stereoscopic vision. The attempt has often been made to bring the sense of solidity under the head of the products of "experience" by reference to some other source, especially to touch and muscular movement; but without success. The fact of stereoscopy, as it can be demonstrated so simply with the stereoscope, is much too "solid" to be thus explained away or to be converted into a by-product of the mere succession of any simpler (two-dimensional) forms.

The acceptance of this creative synthesis and its product must incline our judgment in the case of space, greatly in

[1] *Cf.* my two books on the subject, *The Psychology of Sound*, Cambridge, 1917, and *The Foundations of Music*, Cambridge, 1919.

favour of a similar process, although the product here is not by any means so obvious. But it seems clear, that space cannot be set down as an original or inherent feature of any one sense. The case of pitch-hearing compels us to admit as inherent in any sense only an ordinal field or system and to reserve space for a stage beyond even that of stereoscopy. In that further stage the different senses become correlated to one another. This probably happens in virtue of the similar forms and motions that appear in the different senses and their conjoint variations and displacements (a very complicated matter, of course). But the case of stereoscopic vision again warns us that we must not set this down as the result of cognitive correlation, *i.e.*, as a correlation through the medium of the identity or similarity of the conceptual schemes or ordinal systems that we bring forth from our intellect and attach to the presentations of the various senses, as far as they will fit them. We have no right thus to presuppose a conceptual intellect hovering over the turbulent chaos of sense and weaving it into a hierarchy of orders. It is out of the question that the intellect could create any typical synthesis of sense. This must in each case first appear, if the intellect (when *it* appears) is to set to work upon the former and to support and to enlarge it. However much evidence of conceptual correlation there may be in our advanced studies of the world of space, we can hardly doubt that space is a specially distinguished and unified system of orders to which all the relative ordinal dimensions of all the senses are attached.

The pitch dimension of sound alone stands outside the spatial system. But this one exception is brilliantly instructive. For it shows that the spatial system is so clear and distinct, and that all the senses are so vividly attached to it that we have previously entirely failed to grasp the variations of tonal pitch as an ordinal digression excluded from it and irrelevant to it. Even when the true character of pitch has been in some manner encountered, the first and prevailing inclination of most analysts has been to describe it as "quasi-spatial". On the other hand the systems of the senses, especially of vision, are so closely attached to a spatial system that each of them has often been thought to be equally and similarly spatial in its own degree of complexity. It has required a special motive like that of the exceptional nature of the tonal dimension to force us to abstract from stereoscopy the notion of spatiality and to recognise the binocular stereoscopic field as a merely tri-dimensional ordinal system, in which we encounter *forms* not spaces. In looking into this

system, we indeed seem to be looking into space. But it cannot be spatial originally. It becomes so only when all our senses and their systems become woven into one space. And this new system establishes itself so firmly that we find it quite hard to separate the original components of it from one another and to contemplate them singly and independently. It is only because the spatial inter-attachments of the senses are so vivid and cogent that so many theories have been propounded and accepted whereby one sense was supposed to bestow its special spatial favours upon others in which they were not native.

The tri-dimensional system of vision is so vast and detailed that it may often seem as if it were really the spatial system itself. We look over our visual field and we seem to look through space. But the doubts as to the primacy of distance-from-the-spectator in vision are an indication that men commonly seek for space some sort of background of resistance beyond the panorama of sight. Touch or resistance or movement from point to point seems to lend it substance. And yet none of these is by itself in any way superior. If we shut our eyes and move about, we feel that we shall only fully grasp the extent of our movements when we open our eyes and look. It seems clear in general that sensory space is not inherent in any or each of the sensory fields, but is a structure resting upon all of them at once so far as each is given at any moment, involving them all, and in turn supporting each. The minute study of the many processes that contribute to the elaboration of space must be a very extensive task. One of the hardest parts of it is the separation in ourselves of what is at any moment given of the spatial construct (*i.e.*, what of it is sensory) from what is potential, based it may be upon the dispositions of mere habit or, as in ourselves rather, upon conscious dispositions and expectations and upon conceptual constructs of an every-day kind.

Thus it will appear that we have to reckon not only with the various ordinal dimensions of each sense, *e.g.*, the three of vision, but also with the three dimensions of sensory space which are founded upon these and link them together, not to speak of the conceptual space or spaces that are constructed in cognition. Only, in these different spaces it is not a question of gathering them together from their foundations into one vast system of numerous dimensions, but of generating at each level a new system of three dimensions, in a new mental stuff, as it were. The two bi-dimensional visual fields form one tri-dimensional field; the various bi- or tri-

dimensional fields of the senses generate a single tri-dimensional sensory space, small as an actuality no doubt, but in ceaseless flow through its greater potentialities, which may be fixed by habit or memory. When conception supervenes, it generates a new and more perfect space that will incorporate all the succeeding and repeating actualities of sense. Each ordinal manifold, however, once it is formed and filled can be stated purely in its own terms; in fact, it cannot be stated otherwise, although for the justification of its contents we doubtless can and must look downwards to its springs in the data of sense.

At the same time it should be noticed that the earlier system does not seem to be taken up, and to disappear, into the later system that rests upon it. The earlier is still maintained *under* the later or more integrated one, as it were. Thus the ordinal systems of the two ears merge into one binaural field, which adds to the functions of either that of binaural localisation. But though we hear with two anatomical ears as if we had only one functional ear, yet we have good reason to believe that every ordinal element of either auditory field appears, and has its function, in the binaural field. There is nothing lost by such psychical integration. Similarly in binocular vision, we find a functional unity alongside the anatomical duplication of organs. Our vision has for this reason been called Cyclopean: we see with two eyes,—each of which, when motionless, is incapable of seeing the solidity of stationary bodies,—as if we had one eye midway between the actual two and capable of seeing solidity; as if we had one eye in the middle of the head with which we could see as well as men generally do with two. Now it is obvious that the visual field of the two eyes together is more extended than that of either eye separately, namely, by the amount of the field that is apprehended by each eye to the exclusion of the other. But only the central binocular part is functionally binocular, or capable of showing solidity. At the same time we are aware of the whole field as an apparent unity. Nevertheless it is a familiar fact that this binocular area is crowded with double images of the things we see, so crowded that on discovering this we are lost in wonder that we get any sort of coherent single vision from it at all. A little block of what we see is indeed single and solid; but a much greater part is not so. Only, we are interested exclusively in what is thus single and solid, and when our interest turns upon the doubled objects they become so rapidly single that we fail to notice they have ever been double. The important point in this is that at a certain

moment we turn our interest from a single solid object upon an object that until that moment was doubled in our vision and that our eyes respond so rapidly and correctly to this interest that they make it possible for us very rapidly to see the new object single and solid; so rapidly indeed that we remain unaware that it was ever doubled. Each eye moves correctly so as to catch its own particular image. And so we may infer that this image was there in its doubled psychical form although we did not know this. The psychical reality of double images is usually allowed by those who study this question. What is rarely, if ever, conceded, is that even in the single solid sights both contributory images are there psychically. But if the one point is admitted, so must be the other surely. When there is integration there is unity (single, solid); without integration there is duplication (double, flat). Where unity is patent, we cannot expect duplication (or disintegration) to be patent. But we may have good reason to believe that duplication may then occur in a latent form.

Similarly, space is a new system of orders that arises from the ordinal integration of the several senses. But these it does not obliterate or annul or diminish, as we are all perfectly well aware. And yet, it is so closely incorporated in the ordinal system of each sense, that we have been generally disposed to look upon these, not as merely enriched by the spatial integration, but as originally spatial. In this case we have reduced our concession of unity very greatly from that seemingly required in binocular vision. This change in our attitude can only be due to the clear differentiating effect of the qualitative distinctions of the systems that contribute towards the spatial integration. In the two eyes we usually find a very close parallelism of qualities, except in the case of lustre or of similar experiments in the binocular combination of different colours. And it is notorious how such different colours tend to break up the unity of vision and cause a rivalry of images. But it seems very clear that we must similarly admit that the ordinal fields of the various senses are not originally spatial, but merely ordinal in that limited sense in which the series of pitches is completely ordinal and yet not spatial. And the "stuff" of these different fields is originally different, however unitary the spatial field may finally appear to be to which they all become attached. In other words, the orders of the different sensory fields are conserved within their spatial integration.

2. A Possible Objection.

It is thus we must also approach the objection that may be raised to the admission of ordinal differences, namely, that these differences are perhaps always for the larger part latent or implicit, not explicit. A patch of colour can easily be so arranged that no points are separately visible in it at all. It will, of course, necessarily be distinct at the boundary of the patch, where it is surrounded by the rest of the field of vision, every part of which is always full of sensation. These boundaries are heightened in all cases by some form of contrast, whether of colour or of brightness. Within the patch lie all the orders of the many minimal points of colour that could be seen and differentiated under proper conditions, *e.g.*, when the patch is gradually reduced to disappearance at its various points. We may suppose, if we like, that every visual sensation, no matter how small, is still a mass or area of sensation, having some amount of extent, and that it is therefore rather a system of orders than a single order, even when minimal. But we must be careful not to allow mathematical notions to confuse the issue. It would doubtless be rash to speak of individual orders of the visual system in any absolute sense, as if their number could be counted. The number of just discriminable differences can be approximately estimated and in vision we might perhaps venture to put down the number of minimal particles of sight as the number of cones in the whole retina. It is doubtful whether such a procedure would serve any useful purpose. But it is important to observe the lowest limit in vision of a capacity to distinguish points from one another or to detect the displacement of a point under favourable circumstances. And there is no sense or sanction for conceiving of visual orders within or below the limits of this finest discrimination. Even if finer differences are implicit within the minimal mass, we cannot make these differences explicit, nor have we any indirect warrant for maintaining the existence of finer differences.

But within the larger patch of colour the contrary is true. We can make explicit all its latent differences and we have indirect sanctions besides. These are mainly of two kinds. In the first place the size of the patch is, in general and under similar conditions of convergence of the eyes, relative to the number of discriminable particles included in it. The greater the magnitudes that constitute the form of the patch, the larger the number of particles on which they are based. And the position of the patch in the field of vision depends upon the particular orders that make up the patch and their

absolute differentiæ as orders of the visual system. Two patches in different parts of the visual field may be of the same size, even though none of the ordinal components of the one appear in the other. And any patch always has a definite status in the visual field that marks it out as such from every other visual patch of equal size, or from any patch in the other field of vision.

The tendency to assume that what is implicit in sensation is non-existent there, is responsible for the prevailing failure to distinguish an attribute of order and for the tendency to assume that the intellect could by some sort of manipulations somehow work into an undifferentiated continuum differences that were not originally contained in it, or could bunch together into "signs" of loci (that are not given) qualitative and intensive differences that have themselves no ordinal differentiation. It has never been shown how such transformations could be brought about. It is just as arbitrary to suggest that the intellect could in any other manner either grade or arrange sensory extents so as to arrive at a notion of (mathematical) points,[1] or having drawn an ordinal system from its own deep well could apply this system to sensory material that itself is not ordinal. If you cannot get something out of nothing, neither can you give nothing body by dressing it up in the form of something. Wherever the ordinal systems of mathematics come from, it is clear that they can be applied to the stuff of sense only if that stuff itself contains ordinal differences both explicit and implicit. Then there is no difficulty whatever in the application in general. A serious problem arises only when we ask how the infinitely fine orders of mathematical thought are to be applied to the gross differences of sensory order with a profit that shall repay the labour. The disparity between the two makes one think one might as well set out to read a book with an oil immersion lens. The procedure would indeed be futile if the sense-data to which we suppose mathematics to be applied were merely the sense-data of a single soul as such, or were such data as pain (toothache or colic) or hunger or thirst. These have their place in space it is true, but they are the channels of practically no knowledge of the movements of any bodies in space. In touch and still more in

[1] "The manufacture of points from sense-data" devoid of positional character (*cf.* Mr. Russell's *Knowledge of the External World*, pp. 114 ff.) seems to me for this reason to be a vain effort. Without ordinal differences which are the only justification of this application, one might as well show how quills can be manufactured out of angels' wings or heather out of golden mountains.

vision, on the contrary, sense-data almost invariably enter fully into our spatial constructions and bear in themselves valuable data for knowledge of the positions and movements of bodies in space. This space is already larger than the actual sensory space of any one moment before the intellect begins to endeavour to apply its mathematical thought to it. And the knowledge mathematical thought then wishes to confirm and to extend is already significant knowledge of some degree of certainty about more or less permanent bodies, processes, or distances of (physical) space. By this means the rough data of sense, that seem so rough when we consider the narrow limits of the actual field of any sense at any moment, become relatively exceedingly fine in the vast space attained before the mathematical study of space and its contents begins. The roughness of the sense-data does not then diminish. But what was as sense-datum a mere speck in a small field of vision has become a mere speck in the heavens or on the earth many miles removed from its fellow. We may well long for a more microscopic eye, but no one of us would ever complain of the smallness of the world.

This point may perhaps be made somewhat clearer by a comparison of vision with hearing. The pitches of hearing are ordinal differences like those of vision, and we might just as reasonably apply mathematics to the former as to the latter. But no one would expect any profit from doing so. And the reason can only be this, that the pitches of hearing, as a matter of fact, stand in no real correlation with physical objects and with positions and movements in physical space. As far as physics is concerned, there is about as much profit in applying mathematics to sounds as to hungers or pains. In relation to music the procedure, primitive though its extent be, is of considerable value. But if it were the case that sounds like lights stood out in space in positions as definitely distinct as their pitches can be physically defined, our delicacy of pitch discrimination and its ordinal character would undoubtedly form a most important basis for knowledge of the physical world. But as they do not do so they are useless for that purpose.

It may seem to be a fatal weakness in this argument that space and some knowledge of its relations is supposed to be present before mathematics begins to work upon them. Surely we must first justify this space and our knowledge of it and for that justification mathematical constructions may seem to be an essential preliminary. If this implies that we somehow have the intellect and its methodology in the background from the beginning and that these somehow

allow themselves after careful scrutiny to be applied to the data of sense and to make them work, the view is surely mistaken. The intellect can make nothing work; it is not a transferable power. Not only that, but it must itself be an effect and not a source of determination. It rests upon the senses and it cannot justify out of itself the ground it stands on. It can certainly scrutinise the work of the senses and their integrations, and so bring its own reflection (or its knowledge) of them into complete conformity with them. In other words it can adjust itself more and more perfectly to the senses, as it does to the world in general. It grows more and more orderly by allowing the orderly determinations that proceed from the world and the senses to permeate it more and more thoroughly. But it can do nothing towards forming or initiating the operations of these integrations themselves.

It is for this reason that mathematical thought can only get to work on the data of sense after these have themselves been highly elaborated and already signify space, its contents and their relations. The work of epistemology must be more a process of learning exactly the ground knowledge stands upon than of justifying that ground. If it justifies itself, it can only do so in the sense of knowing its own *de facto* basis and of *being* itself more actively or fully (*i.e.*, more correct). Kant's point of view is here generally valid. You cannot bring space from anywhere and apply it to the data of sense. For you have nowhere to bring it from, and if you seem to bring it, you deceive yourself; for it was already there all the time, as an accomplished fact. Nor can you elaborate space out of non-spatial sense-data by some higher mental process ("experience" or thought). You must simply admit its presence as a feature of the sensory world. This attitude is valid not only for space, but for any other special synthesis or "form" of experience in general.

3. The New Outlook Provided by the Attribute.

Having thus shown the necessity of admitting the presence in sense-data of an attribute of systemic order and having brought the simpler complexities of sense into connexion with the attribute in a way that seems not only correct and profitable as far as it goes, but also gives some prospect of being in time brought to completion, we may now proceed to indicate what further services towards the elucidation of experience may be expected from this attribute and the scheme of integration it suggests.

One of the first is an understanding of the general problem

of cognition itself. What is cognition? Explain to us what it is to know. That has always seemed to be an impossible task because there is surely nothing in the world like knowledge. It is *sui generis*. Who shall show us its fellow? This may well seem a hopeless question. But without some positive answer to it, how could there be any semblance of a science embracing and explaining knowledge. Over against a perfectly unique thing science would be powerless; for science must generalise, if it is to succeed. And it can do so, only by the grouping of like objects or by the orderly arrangement of similar ones. Thus we can hope to explain knowledge only if we can give it a place in the system of experience, whereby it will be seen to occupy a definite position in that system alongside other forms of experience that will then for the first time reveal their similarity to it.

Now the only attributes of sense-data that seem to attain more than a mere trace of complication are the ordinal ones, and of these systemic order seems to go much farther than does temporal order. The latter attains only the simple degree of complication, namely, that of simple forms such as time intervals and rhythms. The interaction of time intervals with one another shows traces of the illusions that are so familiar in systemic forms, especially in the sense of vision. But there can be no doubt that the systemic attribute reaches a higher grade of integration. Stereoscopy is undoubtedly based ultimately upon this attribute, through the intermediate complication of simple forms, of which each single eye is capable. Under conditions of motionlessness of both the eye and its objects, only the integration of these simple forms from both eyes at once will yield stereoscopy. Moreover, there can be no reasonable doubt that the proximate basis of sensory space is the forms that appear in the different senses owing to the common stimulation by physical objects. No one would suggest that thought is an efflux of time and its forms. Nor has it anything to do with the qualities or intensities of sense. And yet it is clearly based upon sense. That has been a prevalent belief in all ages of philosophy. Though the forms of the understanding may be *a priori*, yet they are filled and determined by the changes of sense—without a doubt. And now we begin to suspect that the forms of understanding are *a priori*, only in the sense that they are general or typical while their determinations through sense are particular; but that both these forms in general and their particular shapes are brought about in one and the same process. Sense is the basis of intellect, building it and filling it in identical operations.

If this be so, then the only basis in sense to which we may hopefully ascribe the functions of cognition is the systemic ordinal attribute and its line of integration. Cognition would thus be its outgrowth or integrate.

Much, of course, if not all, has still to be done before such a conclusion could be said to have been established with all the vigour of scientific scrutiny. We should require to make a microscopic examination of many instances of thought processes. We should have to establish the ordinal nature of thought by the widest possible survey of its forms and by study and inferences from its relations to other experiences and even to the body.[1] This would be a task requiring the fullest and most detailed experimental studies. Mere introspective observation is not enough, although that would have to be procured in its finest forms. A great deal of inductive arrangement and inferential approximation would have to be done before the statement of the case could be held to be satisfactorily attained. We should have to learn to pin cognition on to its basis properly, as in organic chemistry the highly complex compounds are gradually analysed and placed correctly in the hierarchy of compounds.

It is only by such procedure as this that we can hope to bring sense and cognition into perfect continuity and so to discover their common root. Not that this root is precisely common to both, as if each were a stem bearing its own branches and leaves. It is more probable that sense is the root of intellect, drawing its food of specific determinations from the physical world and at the same time building up from that nourishment a stem and branches finally bearing in the intellect a vast wealth of leaves, blossoms, and seed.

If we can hope by such means to give some explanation of cognition, we may also aspire to an understanding of the mysteries of recognition and memory. The obscurity and wonderment of these has always been felt to lie in the consciousness of renewal, of again-ness, that attaches to them. It seems an impossible task to explain how we can become conscious that a present experience has been ours before. But the practical needs of recognition are served not so much by a consciousness of repetition, though that may be in some respects a more striking experience, but by the knowledge that an experience that we have for the first time is new to us. And that can be explained easily enough if we suppose that both in the complex mental life of man and in animal life that is characterised rather by habits, effects are produced

[1] For the style of argument I may refer to my discussion of the ordinal nature of pitch.

by a first-time experience that are at least as important, if not more important, than the effects produced by its repetition. These effects are forms of excitement on the animal level and forms of conceptual awareness in the human. We ourselves certainly share in both kinds and we may often cognitively infer from excitement to recognition (as a conceptual idea) or our recognition may often be an immediate knowledge of conceptual wholes to which the experience in question belongs. If we already possess a cognitive structure and a (new) part is now added to it, we shall hardly fail to pass reflexions on this addition, noting its date, its cause, its significance, etc. When the extended whole or the part by which it was extended recurs, the basis of recognition has not then for the first time to be won, but merely to be used, having been provided in the first occurrence. If recognition takes place at a level below cognition proper, say at perception of particulars, then upon the first formation of the perception, not only will the perception form an item in some ordinal scheme, for example of spatial position or temporal sequence or habit series, but it will then form attachments with its neighbours, attachments, it may be, of association between perceptions or between muscular expressions. On renewal these associations will be revived in their degree of strength and will carry the mind forwards in a way impossible in the first instance.

It is, however, a fact familiar to all who have approached the subject in detail or experimentally, that the distinction of the various forms of recognition has not yet been fully carried out nor has their exact status in the scheme of experience been determined. I do not wish to prejudge the outcome of these studies in any way. The point I wish to emphasise is that the conception of an ordinal system rooted in the data of sense and of the various ordinal systems raised upon that basis by successive integrations seems able to remove from the notion of recognition the hopeless mystery that has been one of its most striking features.

The same applies to memory. In memory we come face to face with another striking characteristic of cognition, its special power of association, by means of which the little surface (as it were) of the conceptual contents of the mind at any moment is held in its place as a part of an indefinitely larger area in which we can move about by the bonds of association with an indefinitely great freedom. The relation of the brain to the faculty of memory is a special problem of psycho-physics. Psychology is concerned primarily with the determination of the exact place of memory in the

whole scheme of experience, with its explanation in virtue of that position, with its springs in the actual cognitive contents of any moment, and with the precise description of the manner in which these contents change progressively from moment to moment in the process of remembering. The problem of the unconscious, of the mode of being of memories when they are not actually revived, appears at this point; but I do not think that it necessarily enters into the discussion of the preceding questions. It is a special question, which we hardly seem likely at present to further by discussion.

4. Relation to Psycho-physics.

If the course of experimental psychology and its approximative theoretical interpretation bears out these suggestions, we should at last have an hypothesis upon which all the work of psychology could be concentrated. Even in the present fragmentary state of our knowledge of detail the idea promises to dispel a great deal of the mystery attaching to the mind and its various faculties and their connexions. That is a great merit and would alone suffice to give the idea some value of probability. Even if the indications I have made are not borne out in detail, we may at least expect the successful interpretation of the cognitive functions of the mind to take on a form similar to that suggested.

It is a general principle of the elucidation of the greater systems of reality that the higher or more complex or more inclusive shall be founded upon the lower or simple or more restricted, and that the features of the former shall be shown to run into or to underlie those of the latter. Thus the heavens have become other worlds, in all general characteristics greatly resembling the earth we live on; the complex substances found in plants and animal bodies are members of the groups of elements and their combinations of which the physical world consists; the higher animals are the later products of an evolution sustaining and moulding all animal life. Even heaven itself, to the modern mind that is so rightly impressed with the methods and principles that have proved successful in the science of the last two or three centuries, must be fashioned from the dust of our present imperfect life. Not new material is required, but only a better spirit to inform the whole. The study of the mind from its foundations in sense seems only to confirm this general trend of thought. The high functions of intellect are rooted in the fragments of sense.

We may express this otherwise by saying that the intellect is a natural outgrowth of the world as it is represented in sense. It is not a visitant from another sphere, somehow

attaching itself to the world of sense with which it has no inner kinship and looking through and beyond sense to the real world. It is this primary admission of estrangement that accounts for the seemingly insuperable difficulty of justifying the assumptions that the intellect makes regarding a real world "beyond" the senses. Naturally until the inner bonds of cognition and sense have been discovered there can be nothing but seeming arbitrariness in these interpretations. The gift seems beyond the powers of the giver to bestow and we feel unhappy in doubting its honesty. By what privilege does the intellect stand in the background, and evidently secure in the unquestioned strength of its own faculties, submit all the complications of sense to its own particular canons and measures? What right has it to criticise? Is there more light and power in its decisions of right and wrong than in the interactions characteristic of experiences of lower levels, *e.g.*, in the harmonies and discords of sound, in the agreements and disagreements of colours with one another, in the oppositions and enhancements of pleasures and displeasures? By what right is it a judge in the discipline called epistemology? Surely it is clear that there must be in all levels of experiences an aspect akin to that which we know in cognition as truth and error. The latter cannot be a fundamentally new thing. If so, then all these aspects at their respective stages have equal and similar functions and the intellect can no more criticise and regulate them than it can discover itself over again or establish its own validity by argument. The intellect can only adjust itself to them so as to portray them in its own way—correctly. But it cannot justify them any more than man can convert himself into a mouse.

On the contrary, far from being a stranger to sense, intellect must be its offspring and, after the strange fashion of much of this world of ours, at the same time its strength and support, binding it into a strong coherent whole. Intellect is merely one level of the world's own order, bound to the latter by penetrating ties and in constant interaction with it: its child and partner at once. The mystery of mind lies not so much in the forms of intellect, but in the qualities of sense, such as the smells and the colours, and the single qualitative differences of the other senses. But it may be that these are strange to us merely because they do not combine and complicate into higher levels as do the ordinal aspects of sense. Quality is a whisper to us of worlds we can only guess at. But the repeating integrations of systemic order have made us much at home in the world, so that our intellectual gaze seems to penetrate its greatest depths. Our minds mirror

the world in its order. Mind is in so far a mere extension of the order of the physical universe, a part of it in that respect. The currents of the world penetrate it and run through it without loss of their detail of differences. It is true we can never feel the warmth of the world's being, its inner light and essence, the springs of its spontaneity. But we can feel and know almost its every part and movement and the principles of its changes. And if we fail not to grant it the life and spirit that we feel in ourselves, it cannot be such a wilderness of stocks and stones as many despondently believe who miss in it the rich qualities that we find in sense.

With this in view we can begin to understand how it is that the brain thinks the world, as it were. The brain is a vast structure, but it is at least clearly a whole of parts. The senses enter by different portals and are housed in different regions of it. Each of them is in the first place an intimate system with its own range of simple complications. It is a patent fact that these systems come into close correlation with one another. It is not necessary to think of this, as has perhaps been the prevailing tendency, as an association of images; it is just as likely to be the sort of correlation above ascribed to sensory space, before it is an association of images. Beyond these general indications it has as yet been impossible to carry the interpretation of brain in terms of mind.

But if cognition is prevailingly ordinal in character and is an outgrowth of the complications of the ordinal attribute of sense, there can be no difficulty in carrying on the idea of progressive correlation of brain "centres" upwards or inwards to the hypostatisation of a cerebral substitute for thought itself. It is true we do not know the location of this in the brain, nor are we perhaps likely to learn much about it soon. But it may well be accepted as a general notion for the interpretation of the brain as the organ of mind. The points of the brain at which occur the combinative groupings of groupings that finally reach to the elements of sense will be the cerebral correlatives of the thoughts whose mental function is a similar grouping of groupings of sense-data.

In the brain substrate of the qualities of sense we have probably the highest possible development of the (chemical?) specialisations of neural matter, especially in vision, smell and taste, and hearing. In the other senses there is more homogeneity, though they doubtless differ somewhat from one another. The neural correlate of ordinal differences and their integrative complications and finally of thoughts may well be a still more primitive and generalised process. We can hardly tell. But at least it should be no longer difficult to think of the brain as the organ of the cognitive mind.

II.—MOTIVES IN THE LIGHT OF RECENT DISCUSSION.[1]

By W. McDougall.

There are still, I suppose, psychologists who believe that pleasure and pain, either experienced or anticipated, are the moving powers of all human activity; and others who adhere to the ideo-motor theory of action of the intellectualists, based on the principle that every idea is a tendency to action. Others again seem to feel no need for any theory of action and are content to regard all human activity as merely chains of complicated mechanical reflexes. It is common to all who accept any one of these views that they do not recognise innate conative tendencies, or, if they recognise them at all, regard them as playing a very minor part in human life. To any such who may be present I must offer apologies for inflicting this paper upon them; for all that I have to say must seem to them meaningless and absurd.

My discussion starts from the assumption that the innate constitution of the human species comprises an array of conative dispositions and that these play a great part in human life, whether we call them instincts, or (with Mr. Shand) emotional dispositions, or merely conative tendencies. In my *Social Psychology* I argued that these native tendencies are the mainsprings of all man's activity, and that, in order to explain or understand any particular form of thought or conduct, we have to show that it is prompted and sustained by one or more of these native tendencies; that, in short, these are the moving powers or *motives* of all man's activities. Several psychologists have accepted my account of these native tendencies as in the main correct, but some of them, while admitting that they play a great part in determining the forms of man's conduct, propose to supplement them by recognising other springs of thought and action of a different nature. I wish to examine some of these proposals and to inquire how far they are well founded.

[1] A paper read before the British Psychological Society on 13th March, 1920.

In the first place I would point out that the onus of proof lies with those who make these proposals. My sketch claims to provide a basis of explanation for all conduct; and those who, while accepting it as substantially true, wish to supplement it by admitting other principles of action must show that it is in principle inadequate.

Prof. Woodworth has raised in the most definite form the question I wish to examine, in his *Dynamic Psychology* (published in 1918). In that book he accepts my account of the instincts as substantially and in principle correct, or at least as being drawn on the right lines, no matter how much it may require modification in detail. He agrees that the instincts furnish the motives of much human activity, even on the higher intellectual and moral plane. But he maintains that there are other motive forces in the mind. He makes use of two terms which are very useful and which I adopt for the purpose of this discussion. Likening the organism to a machine, without thereby meaning to commit himself to a mechanistic view of human nature, he points out that, just as in a machine we may distinguish the structural apparatus from the motive power which activates or drives it, so in the organism or the mind, we may distinguish structure from the activating forces; and he speaks of the former as 'mechanism' and of the latter as 'drives'. He raises the question—Does all 'drive' come from the instincts, or are there other kinds of 'drive,' other sources of driving power? To this question his reply is affirmative. He maintains that all 'mechanisms,' whether innate or acquired, contain their own driving power, and, therefore, are not wholly dependent upon 'drive' coming from the instincts. The difference between his view and mine may perhaps be illustrated by carrying further the mechanical analogy and likening the organism to a factory full of varied machinery. According to my view, all the various machines are driven by power transmitted from a central power-station where the current from the electric mains enters the factory and is converted into mechanical power. According to Prof. Woodworth's view, the factory has these central and most powerful dynamos; but, in addition, every machine has its own supplementary dynamo in which 'drive' is generated, though this may be, and often is, augmented by drive supplied from the central power-house.

Woodworth recognises supplementary drives of two orders, resident respectively in native mechanisms and in acquired mechanisms. He points to various native capacities such as those for music, for mathematics, for languages. Referring

to such natural talents, he writes: "If we inquire whether McDougall could be induced to include what we have called native capacities in his list of instincts, we readily assure ourselves that he would not. To include them would lie quite outside of his scheme. They belong rather with those intellectual processes which he asserts to be the servants of the instinctive impulses, to be, in short, mechanisms requiring drive, and not by any means drives themselves. This is the chief point at which the present discussion takes issue with McDougall—indeed, disagreement on this point is the chief element of contention in this whole book. The great aim of the book is, that is to say, to attempt to show that any mechanism—except perhaps some of the most rudimentary that give the simple reflexes—once it is aroused, is capable of furnishing its own drive and also of lending drive to other connected mechanisms." "The question is, whether the mechanisms for the thousand and one things which the human individual has the capacity to do are themselves wholly passive, requiring the drive of these few instincts, or whether each such mechanism can be directly aroused and continue in action without assistance from hunger, sex, self-assertion, curiosity, and the rest" (p. 66). He then develops his argument as follows: "It must be admitted that sometimes the instincts furnish drive for other mechanisms. With respect to activities of the more intellectual sort, drive comes especially from such instincts as those of self-assertion, curiosity and construction. The child can be spurred on to industry in his studies by appealing to his self-feeling. . . . Similarly, his curiosity or his natural impulse to manipulate and make things can be played upon in the interests of getting him to accomplish some task. This is true, and yet it is also true that such motives are likely not to carry the child very far in a line where he finds nothing intrinsically interesting to himself. For example, a child may be induced by such means to make a start in learning to sing, but, unless he has a natural musical gift, he drops out soon . . . whereas the musical child, once started by the appeal to his self-feeling, is carried along by zeal for music itself, and puts forth great energy without requiring such extraneous stimuli to be constantly applied." He then insists on the reality of innate specialised capacities and goes on to say: "The only question that could possibly be raised is as to whether these capacities are anything more than mechanisms. It might perhaps be the case that general factors, such as curiosity, furnished all the drive, but that this drive had most result where it found good

mechanisms. According to such a view, the industry displayed by a certain child in number work would be derived from curiosity, self-assertion, or other general motives that were aroused, his success being due to his possession of extra good mechanisms for dealing with numbers; while the industry of another child in music would be due to the general motives of self-assertion, constructiveness, etc., and the special direction taken by the resulting activity would be due to good mechanisms for appreciating and performing music." This view he rejects on the following grounds. It will not, he says, account for the subject's absorption and interest in such activities, without which little is achieved. "As a general proposition, we may say that the drive that carries forward any activity, when it is running freely and effectively, is inherent in that activity. It is only when an activity is running by its own drive that it can run thus freely and effectively; for as long as it is being driven by some extrinsic motive, it is subject to the distraction of that motive." He points out truly enough that self-consciousness is apt to interfere with the excellence of a public performance, and adds: "It is not true, then, that the motive that initiates a given activity furnishes the motive force for the whole activity; it simply leads the performer up to the act, but the motive force for the act must be inherent. In short, you simply must take as your immediate aim the accomplishment of the particular act before you. If you are to accomplish a given result, you must aim at that result, and, for the moment, must get interested in that result for its own sake. You will never get anywhere in the particular activity by virtue of your general tendencies. This is notably true of continued and complex systems of activity, such as most human activities become. Unless you get up an interest in a system of activities you can accomplish nothing in it. Extraneous motives may bring you to the door of a system of activities, but, once inside, you must drop everything extraneous. McDougall's principle, therefore, that the original impulse or conation supplies the motive power to all the activities that are but means to the attainment of the desired end, would make a very bad guide in education or in any attempt to control and influence the behaviour of men" (p. 71). In support of this he urges: "What a dull world, after all, it would be if things had no interest in themselves but only as they appealed to some one of the primary instincts or a derivative from them". Then he asserts that "human interests keep pace with human capacities. Almost always, where a child displays talent, he also displays interest." And

he makes the following interesting suggestion: "It might not be amiss to extend McDougall's conception of the connection of instincts and emotions so as to speak of a native interest as the affective side of a native capacity. Along with the capacity for music goes the musical interest; along with the capacity for handling numerical relations goes an interest in numbers; along with the capacity for mechanical devices goes the interest in mechanics; along with the capacity for language goes the interest in learning to speak; and so on through the list of capacities both those that are generally present in all men and those that are strong only in the exceptional individual. From the introspective side, an interest is somewhat similar to an emotion; from the side of behaviour, it is a drive towards activity of the capacity to which it is attached." He concludes his argument on native capacities by saying: "The system of native human motives is thus much broader and more adequate to the specialisation of human behaviour than McDougall's conception would allow. It is especially the *objective* interests that are thus provided for—the interest in colour, form, tone, number, spatial arrangement, mechanical effect, plants and animals and human beings. It is not so much the intellectual activities in the abstract—reasoning, imagination, memory, and the rest—that interest us, as the different classes of object that appeal to our natural capacities. The world is interesting, not simply because it affords us food and shelter and stimuli for all our primal instincts, but because we contain within ourselves adaptations to many of its objective characteristics and are easily aroused to interesting and satisfying activity in dealing with these characteristics. The field of human motives is as broad as the world that man can deal with and understand."

Prof. Woodworth then goes on to develop the same thesis in respect to acquired capacities. He gives an excellent account of the process of acquiring such capacities as typewriting and other complex motor facilities. Then he writes: "Learned equipment, so far as indicated above, consists in new 'mechanisms'; and the question remains whether there is any similar development by the individual of new 'drives'". In accordance with his general principle, that every mechanism is also a 'drive,' he answers this question in the affirmative and concludes as follows: "In short, the power of acquiring new mechanisms possessed by the human mind is at the same time a power of acquiring new drives; for every mechanism, when at that stage of its development when it has reached a degree of effectiveness *without having*

yet become entirely automatic is itself a drive and capable of motivating activities that lie beyond its immediate scope" (p. 104). I have quoted Prof. Woodworth's words at some length, because I wish to do full justice to his position, and I do not think that I have omitted to put before you any essential part of his argument. I admit that there is much that is attractive in his position, and I agree with all that he says of the reality and variety of the specialised native capacities. In fact, I believe, that in my own published works (especially in my *Psychology, the Study of Behaviour*) I have gone beyond him in recognising the complexity of the innate 'mechanisms' of the human mind. But I feel that his argument is entirely unconvincing, and it seems to me to contain admissions that are fatal to it. Let me deal first with the acquired capacities. In my *Social Psychology* I wrote, "Are, then, these instinctive impulses the only motive powers of the human mind to thought and action?" I answered this question as follows: "In the developed human mind there are springs of action of another class, namely, acquired habits of thought and action. An acquired mode of activity becomes by repetition habitual, and the more frequently it is repeated the more powerful becomes the habit as a source of impulse or motive power. Few habits can equal in this respect the principal instincts; and habits are in a sense derived from, and secondary to, instincts. . . . Habits are formed only in the service of the instincts" (p. 43). I thus admitted and stated the case which Prof. Woodworth has made his own, so far as acquired habits are concerned. But Woodworth's extension of the principle to all special capacities, both native and acquired, has led me to re-examine the problem of 'drives' in connection with motor habits, about which I had long felt some uneasiness. It may be that I am the victim of contra-suggestibility; for this re-examination leads me to doubt whether even motor habits of the most pronounced kind contain any intrinsic 'drive'. The most deeply rooted motor habit that I can discover in myself is perhaps the repetition of the alphabet with a particular rhythm which I learnt as a young child. Now, if I launch myself on the repetition of the alphabet, and if I check myself in mid-career, I do experience a sense of dissatisfaction and incompleteness, a vague unsatisfied tendency to complete the process, which might be taken as evidence of the intrinsic drive of this habit. But I submit that it can be otherwise explained. First, the rhythm has a certain form or scheme which is vaguely present to my consciousness as a whole when I set out to repeat the alphabet, and the failure

explicitly to fill out, to realise, this scheme leaves a sense of incompleteness. But this again depends upon the original purpose of repeating the whole alphabet. It has frequently happened to me that I found myself uncertain of the order of sequence of some letters of the alphabet, more especially of the letters I, J, K, L, as, for example, in using a dictionary. My practice on such occasions is to repeat the alphabet from the beginning with the habitual rhythm, until I come to the required letter. When I have reached this letter, my purpose is attained, and I experience no tendency to run on further, no sense of incompleteness or dissatisfaction. That is to say, this very old and well-established motor habit seems to have no intrinsic 'drive,' but seems to depend for its 'drive' wholly upon the purpose of the moment, a drive entirely extrinsic to itself.

I arrive at the same result when I examine my performance of any other habitual action. And I challenge Prof. Woodworth and all of you to examine your motor facilities critically from the point of view of this question. I think you will be led to share my conclusion that the motor habit contains no intrinsic drive; it determines *how* we shall execute our purposes, but does not prompt and sustain the doing. There is a class of trivial habits, of which twirling the moustache may stand as the type. At first sight they may seem to be operated by intrinsic drives; but if you will consider any such habit carefully, I think you will see that, just as it was originally acquired in the service of some extrinsic purpose or motive, so now it operates only as a part of some larger complex activity that has some underlying motive, say, in the case of the twirling of the moustache, embarrassment, vanity, self-display; it has become a channel through which some such impulse finds a ready outlet.

Woodworth, in asserting that every acquired mechanism is itself a drive, makes a fatal but necessary reservation—namely, provided that it has 'not yet become entirely automatic' (p. 104). He admits then, that when the habit is perfected, when it has become automatic, it ceases to be or to have any 'drive'. Is not this admission fatal to his whole contention? If the habit becomes a drive, acquires impulsive power, simply through repetition, why should further repetition and perfection of it as mechanism, reduce it from the position of being also a drive? Why should this deprive it of impulsive power and reduce it to the position of mere mechanism? Woodworth suggests no explanation, and I do not think that any can be suggested. Woodworth himself has pointed out the fact that we are apt to lose interest in practising a skilled

movement as soon as we have completely mastered all its difficulties (p. 102). This is another fatal admission. He writes: "Action that is too easy because all difficulties have been smoothed away or already subjugated by well-formed habits is automatic rather than interesting, and action that meets with unsurmountable obstacles is distinctly annoying; but action that encounters resistance but overcomes it without resorting to the last ounce of effort is distinctly interesting" (p. 102). Very true! He adds: "Those who, like McDougall, attempt to trace all motive force to the instincts, would regard such acts as driven by the native impulses of curiosity and manipulation" (p. 103). But that is not quite correct. I should assign these impulses to the persistent manipulations of a monkey; but, in the case of a boy or man, I should invoke the great impulse of self-assertion as the usual prime mover and sustainer of such persistent effort to acquire skill. And the reason that such a process ceases to be interesting as soon as complete mastery is achieved is simply that then the purpose is achieved, the impulse, the desire has attained its end. Of course such skill may become interesting again from a different motive; it may be used in the service of self-display, as when the boy who has mastered some feat of sleight of hand displays his dexterity to an admiring audience; or again it may be utilised in the service of economic or other motives.

If then Woodworth's principle breaks down in this case of acquired facilities, if these on careful consideration stand revealed as mere mechanisms devoid of all intrinsic 'drive,' is it not probable that the same is true of more complex capacities, even of those innate capacities, whose nature is most obscure, but which are perhaps the best examples of mechanisms that seem also to be drives?

Let us consider some highly complex capacities which are no doubt partly native, partly acquired. Here also Woodworth makes a fatal admission. He writes, "*Almost* always, where a child displays talent, he also displays interest" (p. 74). Here the fatal word is 'almost'. If Woodworth could have truthfully left out that little word *almost*, his argument would have been strong, though not conclusive. But the necessity of using the word 'almost' to qualify the statement is, I say, a fatal admission. If Woodworth's doctrine were true, then, in proportion as talent or capacity is strong and in proportion as it is developed and specialised by use, its exercise should always, without exception, be the more interesting and should furnish a stronger 'drive' for its own exercise. But what do we find? Do we not all know instances of men who have by long years of labour acquired skill and proficiency in some

calling, say bank-clerking, accountancy, dentistry or medicine, and who, as soon as they have amassed or otherwise acquired a competency which will enable them to live modestly without the exercise of their highly specialised and developed capacity, lay down their tools with a sigh of relief, and spend their remaining years in a vain struggle to acquire proficiency in golf or angling or gardening? In many such cases we see how capacity, rooted in nature and built up by long exercise, fails to show any evidence of having any intrinsic interest or driving power. I cannot myself point to any striking instance of a musician or a mathematician who has behaved in this way, but I have little doubt that such instances could be found. I call to mind, however, a distinguished surgeon who retired from his London practice at the height of his career and was to be seen in after years driving his team of sturdy farm horses, his legs dangling happily from the shaft of the waggon

The strongest instances that can be adduced in support of Woodworth's thesis are the men of genius who, like Mozart or Lord Kelvin, take to music or mathematics as a duck to the water. We can only judge of such cases by what we can learn of humbler examples of similar kinds. Do any of the children that we can observe closely and who develop special talent in music, mathematics, drawing or football, seem to exercise these talents independently of all extrinsic motives? They enjoy their exercises no doubt; they may work at them to the point of exhaustion; they become absorbed in them. But are there not always extrinsic motives at work—ambition, vanity, the desire to excel, emulation, the desire to please their parents or teachers, the desire to understand, the desire to fit themselves for a career, the desire to overcome difficulties, the vague desire to give expression to various emotions? All or some of these and other similar motives are commonly at work sustaining their efforts, and renewing them after moments of discouragement. And are there not talented but lazy children who are the despair of their teachers, and who never develop their talents, or only do so when they begin to feel the spur of the economic motive? A further objection to the view that such a native capacity as a talent for music is a 'mechanism' which contains an intrinsic 'drive' is the fact that any such talent is unquestionably complex, it depends upon superiority in a number of more elementary functions, though it is difficult to effect the analysis of any particular example. Thus musical talent implies superiority in such functions as tone-discrimination, appreciation of rhythm, of time, of tone relations. It is the happy

conjunction of native excellence in these and other functions that constitutes musical talent. But can we suppose that such a function as tone-discrimination depends on a 'mechanism' that has an intrinsic drive? Do we ever find anyone absorbed in the exercise of such a function for its own sake? Is it not always in the service of some extrinsic purpose that it is exercised? Or consider such a natural endowment as an exceptionally vivid and accurate visual memory. Is it not only when its possessor begins to understand that this is an instrument which he can make use of in the service of various extrinsic purposes that he begins deliberately to exercise it? I see, then, no good evidence in support of Woodworth's view that every mechanism contains its own drive, even in the facts of those most specialised native capacities which are the most favourable to his view. And I see serious difficulties in the way of any such view.

Let me invite your consideration of a problem in motives which is occupying me at this time. In my garden is the root of a huge ash tree which was cut down many years ago. Being much exercised by the fuel problem this winter, I cast my eye upon this root, reflecting that, if it were extracted and cut up, it would make about a ton of excellent fuel, worth at current rates about 50s. But I knew also that to extract it and cut it up would be a very severe piece of labour. No man in his senses would undertake it for a wage of 50s. Nor did I feel strongly attracted to the task. However, I reflected that, if I could interest one or more of my boys in the task, it would provide us with healthy outdoor occupation and secure me the pleasure of their companionship. My own motives, then, seemed clear. But how to inspire a schoolboy of many and varied interests with enthusiasm for this giant task? That was a serious problem. I opened the campaign in the Christmas holidays by a few remarks on our need of wood and the mass of it contained in that old root. They knew at once what I was after, and retorted, 'Why don't you buy another load?' They distinctly shied at the implied proposition. The economic motive showed no signs of life, and I would not bribe them with money. What other motives could I appeal to or hope to stir up? Even President Stanley Hall, I think, has not identified a special capacity for digging up the roots of immense trees as part of man's native inheritance from his savage ancestors. However, by putting on them a little personal pressure, that is, showing them that I strongly desired their help, I made a start, and in the course of several afternoons opened a ditch round about the object of my attack. But the work flagged;

the boys worked only to please me; and I foresaw that there would be little satisfaction to me or to them, so long as they worked from this motive only. So I dug a little deeper myself, and began to expose some of the curling giant roots. Then the youngest boy (of 11 years) began to display an interest in them; it was, I think, partly curiosity, a desire to see them more fully and to trace out their ramifications, partly a zest in using an axe upon them and actually detaching pieces that could be transferred to the fuel house. The accomplishment of the work no longer seemed so remote and improbable. Then we came upon a mass of brickbats among the tangled roots. They added to our difficulties, but they gave a touch of archæological interest. Who put them there? What else might we find buried so safely for a hundred years or more? Then we bored two deep holes in the wood in preparation for a charge of blasting powder, and began to look forward to a glorious explosion. But the main buttresses must be got away before the blasting, or we could not hope to shatter it effectively. And so we hacked away with axes and saws and forks and wedges and spades. By this time my boy was grown keener than myself. As soon as he comes home from school he sets to work by himself and spends many hours of most vigorous effort in digging and chopping and scraping, and often he asks—'When are you coming out to have another go at the old root?' By this time we both regard the monster with an alternation of hatred and of affection, respect, and admiration. For it baffles us so frequently and in such ingenious ways. We think we are on the point of getting off a chunk, and we find the old monster is holding it fast below; and we have to struggle and strive and exert all our ingenuity to overcome our new difficulties. By this time the chief motive at work in both of us may, I think, be indicated by the phrase, "We won't be beaten by the old beast". Every chunk we get off is an occasion of joyous triumph, and every new root we uncover is a fresh challenge to our ingenuity and determination. If one of us succeeds in getting off a piece in the absence of the other, it is exhibited on his return with mutual satisfaction. My little son greatly regretted that anything so stupid as a psychological discussion should cause me to waste this fine Saturday afternoon, which might have been devoted to our great work; and I have very little doubt that at this moment he is battling vigorously with some newly discovered difficulty. Further, I am confident that his keenness will endure to the end; and I know that, when we two sit before the fire locked in the fierce delights of chess, on some bitter

evening of an English April, we shall enjoy the glowing warmth sent out by the fragments of our old friend and enemy far more than if we had merely bought another load of logs.

Here, then, is a case of absorption in a task, of sustained keenness and even enthusiasm for it, a task of extreme strenuousness in the service of which we suffer many pains, lose many bits of skin from our knuckles, strain our muscles to the utmost, and deeply wrinkle our brows. And the motives of this activity are all extrinsic; there is no question of the exercise of any specialised native capacity, nor of any acquired special capacity. The work is all of the roughest, most unspecialised kind, involving varied and non-habitual movements; yet we pursue it with an ardour worthy of a great cause; and, though my motives are no doubt somewhat sophisticated and complex, my boys are simple and direct, and, though extrinsic, very efficient.[1]

It would be difficult to find an instance better suited to serve as a problem in motives; and if Prof. Woodworth or any one here will show that the activities I have described are maintained by intrinsic motives, he will go far to convince me of my general error. In order to be explicit, I will add that my boy's activity seems to be an instance of unformulated volition of a not uncommon kind. In it the great impulse of self-assertion plays a principal part as energiser of the whole process. Without understanding how or why he has become involved in this arduous task, without having clearly defined his end, and without strongly desiring the end for its own sake, he yet strives keenly towards this end, because he has begun the task and refuses to be beaten; and every effort and especially every step of progress towards the end confirms this set of the will; so that, even if the end should cease to be in itself desirable, it would not be easy to change our purpose. If, for example, the weather should become so warm that our root ceased to have any value as fuel, we should, I think, continue at our task, or leave it only with regret and a disagreeable sense of failure and frustration.

I pass on to say a very few words about the emendations of my conception of the rôle of instinctive impulses proposed by Mr. Graham Wallas in his very valuable book, *The Great Society*. Unlike Prof. Woodworth, who, by his use of the

[1] It is perhaps worth while to add the further history of this process. I had to go abroad when we had succeeded in dividing the main mass and extracting one half of it. My boy inspired some of his companions with something of his keenness and with their help extracted the remaining half.

terms 'mechanism' and 'drive,' has accentuated and insisted upon the distinction that I had made between cognitive and conative dispositions, Mr. Wallas seeks to abolish this distinction altogether. He says that I, in making this distinction, commit a formal fallacy, which he calls 'the fallacy of two planes,' in that I distinguish between 'instinctive impulses' and 'intellectual apparatus'. He seems to be under the impression that I regard instinctive activities as devoid of all truly mental nature, as 'anoëtic,' if not merely mechanical and unconscious; whereas I have insisted, more than any other serious writer on this topic, on the high complexity of the cognitive functions involved in many purely instinctive acts. Mr. Wallas seems to have become alarmed by the success of the attack upon 'intellectualism' which he made in his *Human Nature in Politics*; and he seems to have set himself to undo the results he had achieved. He now seeks to establish thought or thinking as an independent native capacity containing its own 'drive' or conative energy.

Comparing fear and thought, he says that I would describe fear as impulse and thought as apparatus. But, he says, "Fear and Thought, if we project our dispositions on to the plane of consciousness, are both impulses; and if we project them on to the plane of structure they are both of them 'apparatus'". He holds "that we are born with a tendency, under appropriate conditions, to think, which is as original and independent as our tendency, under appropriate conditions, to run away" (p. 47). But then he is not quite satisfied with the assumption that all thinking is the work of this alleged original tendency. He adds: "But even if, as I believe, intelligence is as truly a part of our inherited nature, and as independent a cause of human action as any of the traditional list of instincts, it is not a sufficient analysis of the facts merely to add a single disposition to the rest and call it Intelligence. There are at least two dispositions, curiosity and 'Trial and Error,' which sometimes cause action which is rather instinctive than intelligent, and sometimes action which is rather intelligent than instinctive. And there are two other dispositions (which I shall call Thought and Language) whose action is normally, if not invariably, intelligent" (p. 48).

He says that "Curiosity may be placed almost exactly on the doubtful line which divides Instinct from Intelligence" and that "if a distinction is to be drawn between Instinct and Intelligence, the disposition of Curiosity may in his case (the case of a curious astronomer) be classed as almost purely intelligent" (p. 49).

Again, Thought is "an independently stimulated disposition" (p. 231). "In the case of Thought the essential functions of the disposition are clearly intellectual. . . . I mean here by the disposition of Thought our tendency to carry out the process of reflexion or 'thinking'—the process to which we refer when we say that we stopped what we were doing in order to 'think'. The chief external sign of Thought in this sense is a bodily inertia, which contrasts sharply with the tightened muscles of Curiosity, or the random movements of Trial and Error" (p. 51). He sees in the occasional immobility of animals, during rest without sleep, evidence of their possession of such a 'disposition of Thought'. Language also is "a true inherited disposition" (p. 55).

Mr. Wallas thus proposes to rescue intelligence from the dire position into which it was thrown by his too spirited and successful attack upon it; he proposes to set up, alongside the instincts, these four 'intelligent dispositions,' of which one, Curiosity, is partially redeemed from its undignified and unintelligent position among the instincts, and the other three are created *de novo*.

There is a certain affinity between these views of Mr. Wallas and those of Prof. Woodworth. Both are attempts to give a modified sanction to intellectualism in psychology, which, I had hoped, had died a natural death upon the demonstration of the fallacy of the 'ideo-motor theory'. What is common to them is the rejection of the notion that the conative energy of the instincts suffices to sustain our more complex mental processes, and the endeavour to assign to such processes an intrinsic conative energy independent of that of the instincts. I have not time to criticise Mr. Wallas' views in detail. But I will say that of the two attempts Prof. Woodworth's seems to me by far the more attractive. There is in it no essential lack of clarity or of consistency of principle; it is capable of being logically thought through. But I cannot say the same of Mr. Wallas' scheme. I am sorry to find myself so far from agreement with him; because I regard him as a very valuable ally and I highly admire much of his work. But, if I may venture to be frank, I would apply a famous phrase of William James and say that Mr. Wallas seems to me to have made "one great blooming, buzzing confusion" of the whole problem of the relation of instinct to intelligence. Woodworth recognises with me that the intellectual apparatus of the mind is a vast and complicated structure, a vast ordered system of cognitive dispositions or, as he would say, 'mechanisms'. He would regard each of them as having in some degree that intrinsic energy

which I believe to be the peculiar property of the conative or emotional dispositions. Wallas on the other hand would save the independence of our intellectual processes from the sway of our instinctive impulses by inventing the new disposition to Thought whose energy is to animate all the apparatus of the intellectual life, in somewhat the same way in which I have imagined it to be animated and sustained by the conative energy of the instincts. And he makes closer the parallel between his disposition of Thought and the instincts by recognising an emotion of thought; for he says—"since Thought is a true disposition, it, like all the other dispositions, has not only its appropriate group of stimuli and its appropriate course of action, but also its appropriate emotion" (p. 245). If he had been content with this, I think his position would have been more respectable. But he is not so content. He invents also a disposition of 'trial and error' and one of language. And apparently he has a whole host of others more or less up his sleeve. For on one page he tells us "the psychological dispositions may be divided roughly into comparatively simple facts like the senses, memory, fatigue, etc., and the more complex facts of Instinct and Intelligence" (p. 56), and on another page (77) he speaks of "the disposition of habit," and on yet another (38) he tells us that "intelligence acts as an independent directing force". So that even fatigue and habit have their own dispositions, memory another, sense perception yet another; and I cannot see where Mr. Wallas can stop in this headlong process. He seems to be on the high road to a new faculty psychology of the very loosest kind; a psychology which will take every named function and peculiarity of our mental life and 'explain' it by attributing it to a special disposition or faculty. Finally I would point out that Mr. Wallas, after evolving his independently active apparatus of thought at the cost of so much confusion and disregard of all strict principles of method, introduces near the end of the book this surprising statement: "Any one of the Instincts can again serve as the motive which impels us to undertake and continue the toil of Thought, without, if we see clearly the facts of our nature, distorting either the methods or the conclusions of our Thought" (p. 244). That is to say, after all his labours on behalf of the independence of Thought, he falls back into the slough of McDougallism. The spectacle of so great and good a man thus falling off the ladder which he has laboriously constructed at such great cost is pathetic.

I had hoped to examine the views of a third writer, namely, Prof. W. E. Hocking, as set out in his interesting book

Human Nature and its Remaking. But I have time only for a few brief remarks. Hocking's account of human nature is based on the acceptance of instincts as the all-important foundations. But he is not very clear as to what instincts he accepts. He cites the lists of human instincts given by James, by Thorndike, and by myself; he expresses no decided preference for any one of them, though, in describing Prof. Thorndike's inventory as the most discriminating, he seems to imply approval of it. As my hearers are aware, Thorndike ascribes every distinguishable movement of mind or body to an independent instinct, whereas, in place of this innumerable multitude, James recognised some nineteen major instincts of man, and I a dozen, in addition to some few very simple almost purely motor tendencies on which the acquisition of our general powers of bodily movement is based. Hocking therefore introduces two convenient terms to distinguish the extreme views. He describes Thorndike as a 'splitter' and myself as a 'slumper'. And then in successive chapters he goes on to show that he himself is far more of a slumper than I am. He postulates, over and above the more commonly recognised instincts, certain 'central instincts' which he proposes to call alternatively 'necessary interests'. And these alleged 'central instincts' are made to play an all-important part in the 'remaking' of human nature. The central instincts are not specifically dispositions to thought, such as Mr. Wallas would have us recognise. For Hocking agrees with me, not only in being a 'slumper,' but also in recognising that thought is motived and sustained by instinctive impulses. "The exercise of thought," he says, "as has often been remarked, is a matter of our impulsive nature, and it is the underlying craving for action, not the particular type of activity, that betokens the instinct" (p. 62). What then are these central instincts? We read: "My judgment is that the most significant of human tendencies, those without which no theory of instinct would be worth its salt in illuminating human nature, are tendencies of this central sort. . . . I should include among these necessary interests our sociability as well as our curiosity . . . I have mentioned our formal interest in rhythm and I should add, in unity, harmony, differentiation, completeness and simplicity" (p. 65); and he adds an instinct for self-preservation or the "will to live". "In these necessary interests, we have the most significant but also the most obscure of original human tendencies. It is they that have been the chief stumbling block in the theory of instinct; for while that theory becomes comparatively trivial when they are omitted, it has always

been muddled when they have been included. . . . The chief difficulty of reaching a clear and exhaustive enumeration of these tendencies . . . lies in the fact that they are not distinct and separable entities. They are in reality various aspects of one fundamental instinct or necessary interest" (p. 66). That is the first step of the slumping process which is to raise the theory of instinct above triviality and muddle. He proceeds to 'slump' more thoroughly. "The question I wish to raise is not whether motives are compounded; it is rather whether they are originally separate. . . . Can we say, for example, that curiosity is one thing and the love of power or security a different and separable thing?" He goes on to argue that food-getting, play, fear, acquisition, construction, sex, and love of mankind in general are also all alike manifestations of one central instinct, the 'will to power' or the 'will to live'; for "eating by itself, is a form of conquest, surrounding what is alien and making it a part of ourselves". Play is "practice in mastery". "Fear is a negative expression of our concern for power—a form of the desire to be in a relation of power to experience." And so on. That is to say, Prof. Hocking is not content to regard the instincts as so many distinct differentiations of the original life energy, as I have done, and then to try to show how, upon this multiple basis of distinct conative tendencies, a new and higher unity is achieved by the building up of character and will. Rather he would avoid all this troublesome work of analysis and synthesis by assuming that the process of differentiation has never gone beyond a rudimentary stage, so that the building up, the unifying, of character is but a small task. If I could think this optimistic doctrine to be true, I should be glad to accept it and I should feel at liberty to retire and to cultivate my garden. I venture to suggest that this wholesale 'slumping' of the instincts by Prof. Hocking is at bottom the expression of the impatience of the practical man and philosopher with the slow process of scientific analysis. In conclusion I may refer to the fact that Prof. Hocking finds some support for his view by appealing to the authority of another great 'slumper,' namely, Prof. Freud, who has 'slumped' all the instincts in one, namely, the sexual instinct. I venture to think that he will in future find less support in this direction than he claims; for there are perceptible indications that Freud himself, as well as some of his disciples, is becoming aware that the 'slumping' has been overdone.

III.—SOME RECENT THEORIES OF CONSCIOUSNESS.

By A. K. Rogers.

The term 'dualism' in epistemology has sometimes involved, and almost universally is interpreted by its opponents as involving, the claim that the original and sole immediate objects of knowledge are subjective or mental states. It should be evident, however, that nothing in the word implies this necessarily. The essential point of dualism is, simply, the recognition that somewhere in connection with the knowledge situation a kind of fact is to be found which can be definitely distinguished, alike from the processes which science identifies with the physical organism, and from the objects outside the organism which we normally suppose ourselves to know,—the sort of fact, namely, to which traditional philosophy has assigned such names as sensation, feeling, idea, and the like. I propose to waive for the present all problems having to do with the part which the mental state plays in knowledge, or the relation in which it stands to the physical world; my sole purpose is to examine the claim that such things as mental states do not exist, but have been foisted on us by unscrupulous metaphysicians. And with this in view I shall consider certain recent attempts to reconstrue the situation in a way to leave them out.

The reason for the widespread disposition to repudiate mental states, apart from the—I believe mistaken—supposition that they lead to subjectivism in knowledge, is, probably, the immense simplification of the philosophic problem that would result, and, in particular, the greater ease of adjusting philosophy to science. The intrusion of an entity called consciousness into human behaviour is, it may be admitted, somewhat disconcerting to the seeker after smooth and uncomplicated theories. It has long been a disturbing element; and a certain impatience at the endless disputations to which the attempt to adjust it has led, is not unnatural. In the past we find materialism intermittently making a strong appeal to minds of a certain type—minds that care more for broad general effects than for careful

analysis—just by its success in evading the problem. But it is generally admitted that materialism works by shutting its eyes to facts of a certain sort. It is in a far more subtle and sophisticated form that the newer attempts are made, but their method nevertheless is in principle the same—to meet the problem of the status of consciousness by showing that the problem itself as commonly understood is illegitimate and unmeaning.

Before examining more closely some of the typical directions which this new quest has taken, it will be advisable to call attention to certain ambiguities to which the word 'consciousness' lends itself, since these play a very large part in the situation. The chance for ambiguity is well exemplified in James' important and influential essay, "Does Consciousness Exist?" Now when in modern times a philosopher maintains that consciousness *does* exist, the primary, and certainly the simplest meaning to be attributed to him is, that there exists a certain stuff of immediate experience known traditionally to psychologists as constituting the subject-matter of their science, and independent of the stuff of the physical world. And in the end James may be said to deny consciousness as thus defined, though with qualifications very important for the estimating of his doctrine. But explicitly his thesis turns upon something quite different, not at all to the advantage of clearness. What primarily he starts out by denying is indeed not consciousness in *any* prevalent sense of the word, but the *self*, or the diaphanous substitute for the self represented by Kant's transcendental ego, as a hypothetical receptacle of consciousness, or source of consciousness, or 'knower'. Nothing but confusion, however, can arise from identifying the fate of consciousness with the fate of the self or knower, and the entire demolition of a substantial self would not affect at all the position of most present-day defenders of the concept.

What, however, for the most part James himself really is talking about under the name of consciousness is, as soon appears, *not* the knower; it is the act or process of *knowing*. Now knowledge is, I have no wish to deny, a proper claimant to the title of consciousness; certainly, in recent discussions, 'to be conscious' more often than not is to be taken as meaning 'to be conscious *of*,' or 'to know'. But this makes it all the more necessary to proceed cautiously in argument. Since there is a natural and innocent difference of meaning here possible, one should make very certain that he does not shift his own interpretation in the course of discussion, or that he does not yield to the temptation to refute an opponent by

the unconvincing device of changing the definition of his opponent's terms. Consciousness as a fact of psychic existence, in the sense in which all but the most recent psychology has been wont to talk of sensations and the like, is one thing; consciousness as 'knowing' is not, self-evidently, the same thing. If the doctrine that consciousness is not an existent but a relation, means no more than that *knowing* is not an existent but a relation, it loses most of its appearance of novelty and paradox. Knowing then is *not* an existent. The self, or knower, may not *be* at all. The *objects* of knowledge may be as such not subjective or mental in the least. But none of these propositions trouble the dualist, because they all refer to something quite different from that which, rightly or wrongly, he has in mind when he declares that such a thing as consciousness exists.

I have no intention of implying that when these ambiguities are avoided, the case against consciousness falls to the ground. On the contrary, the recent reaction against the concept has brought to light certain definite types of philosophical theory that are rather unusually novel and interesting, and that deserve consideration. I only say that we shall get nowhere unless we do make clear to ourselves precisely what it is we are talking about; and certainly we shall not succeed in refuting alternative possibilities without first recognising accurately what they are. And it might therefore, in view of the many chances of misunderstanding, be better to avoid the term consciousness as much as possible. Accordingly I shall, unless the situation seems unambiguous, call the supposed subjective facts (the entities in dispute) psychical states rather than states of consciousness; while knowledge, or knowing, there is no trouble in calling by its proper name.

What is, then, the main burden of the new theories? Primarily this, that there is no 'content' of perception of a peculiarly subjective sort, but that such content is constituted by the actual bodily presence of the known world of objects. If this is so, objects must apparently become 'objects of knowledge' (consciousness) by taking on under specific conditions certain new relationships. When therefore we say that consciousness is a relation, the primary and most unambiguous thing we seem to mean is, that 'things' become the 'content of knowledge' only as they enter into these particular relations,—to one another or to a further entity,—whereby something additional becomes true of them which did not hold when they were just plain objects. And then it is incumbent upon us to specify just what the relationship may be.

As a first type of answer to this question I shall turn to the English neo-realists as represented by Mr. Alexander. And it is necessary first to stop for a moment to note another ambiguity in the term consciousness, which extends also to the corresponding term 'knowledge'. By knowledge I may mean the content of knowledge, or I may mean the act of knowing. If we use the term in this last sense, we no longer have the theory that consciousness is a relation, but that it is an *act;* though if something called a 'knower' be also admitted, the act may in a secondary sense involve a relation between the knower and the things which it knows. In Mr. Alexander's case, however, the act is not strictly an act *of* something, but an ultimate entity; and so for him consciousness as *knowing* is not a relation, but a 'subjective' entity of a sort, ultimate and indefinable. However, that which renders a particular object a content of knowledge may still be regarded as a new relationship into which it enters to the 'act' of knowing, or to 'awareness'—a relationship which Mr. Alexander calls 'compresence'.

The chief merit I find in Mr. Alexander's type of theory, as compared with earlier attempts to get rid of psychical states, lies in the way in which it is able to do justice to the actual qualitative diversity of the world. In old-fashioned materialism, any place in the universe for the quality 'redness' as such has vanished; and the materialist has accordingly to shut his eyes to the fact that such qualitative redness is an actual part of reality, with a perfectly definite character of its own, not discoverable either in the nervous activities of the organism, or in the environment as scientifically described. Mr. Alexander's type of realism, by its peculiar doctrine of awareness, escapes this fatal objection. It does this by the original and ingenious device of accepting at its face value the full fact which traditionally has been called a sensation, and then analysing it into two separable parts, the objectionable 'sensation' entity disappearing in the analysis, while yet the qualitative nature for which materialism finds no place remains. In other words, the 'character' of the supposed mental state sets up in business for itself as the 'object,' while the 'subjective' aspect is left as a bare contentless act, deprived of all substantiality and qualitative variety, whose coincidence then with a given quality constitutes the knowledge or awareness of it. A 'red' sensation thus turns into a sensation or awareness *of red;* and in 'red' we are already outside the subjective realm, in a strictly objective universe.

A criticism of Mr. Alexander's theory might start from

any one of three points—the conception of the 'object' with which it leaves us, the conception of mental activity or awareness, and the relation between the two.' To be adequate, however, it would have to involve something like a complete survey of the epistemological problem; and accordingly I profess here only to be noting the general nature of the doubts which the theory calls forth in my own mind. And most of these have a common root. I find it far easier, that is, to realise, and to accept, the concrete mental experience from which the analysis proceeds, than I do either of the entities into which this is split up. Both these entities indeed appear to me abstractions in which, except as abstractions, I find it impossible sincerely to believe. On the side of the 'object' there is, to be sure, a definite and thinkable content, since all the qualitative character of the original fact was placed there; but it is content quite devoid of the existential and causally effective character of what I naturally mean by an objectively real world. Abstracting the qualitative essence from my experience gives me redness, and spatiality, and the like; but it does not, so far as I can make out, give me *red things in real space;* it is, in short, a scheme of logical properties, rather than a red-blooded world of actualities. If one does not object to finding his universe reduced to logic, this will not trouble him; but at least one should recognise clearly that the 'object' *redness*, and the object *red existence*, have no plain identity of meaning, and that it is only the first that has been brought unambiguously 'within experience'.

On the 'subject' side the difficulty is similar, but appreciably greater, since in abstracting 'awareness' from its object there is no content left in terms of which to think this mental 'act'. Now I do believe in the presence, in knowing, of what can be called 'activity'. By mental activity I mean, however, something that can be empirically described—a succession of concrete mental states characterised by a sense of direction, of intent or purpose, made possible through the presence of an 'idea' of some future end or event to which the process is felt as leading up. But this makes use of that concept of the mental, as a stream of psychical existences specifically qualified, which the theory in question repudiates. And what an act is *sui generis*, as an indefinable something that is neither bodily movement—a physical act,—nor the ideal realisation of intent, I confess to an entire inability to understand. Action, unless we choose to give the term a meaning quite different from what it means in any normal human use, implies something of which it is the act; and

there cannot be an act *of* that which has no nature *except* action. Now, of course, we shall find no qualitative content in perception as a 'mental' fact, if we have agreed to mean by the mental only the 'process' of perceiving, from which all content has been carefully removed. And indeed in *no* sense can the 'process' of perceiving be said to be coloured or odorous. The act itself is not coloured, because 'act' is a term calling attention not to the content of the psychic stream, but to a functional or relational aspect of it; and relation and quality are different things. But before we conclude from this that colour quality is exclusively in the object, as distinct from the 'conscious' fact, it is well to make sure that the 'act' has any concrete existence at all except as it is embodied in a flow of immediate psychological experience, to which colour quality *may*, and some quality or other *must*, belong. In the *total* 'subjective' fact, *both* quality and function are involved.

And now having torn apart two indivisible aspects of a single thing, it will not be strange if it proves troublesome to get them together again satisfactorily. One can understand that it might be difficult at best to make plain the relationship between a diaphanous and indefinable 'act,' and an abstract quality,—a relation with the peculiarity that one term *is* nothing but the awareness of the other term:[1] and perhaps no better case could have been made of it than Mr. Alexander has made. But to my own mind few things could be more unilluminating than to explain knowledge as the mere 'togetherness' of awareness and a quality. Togetherness, as among the emptiest and most general of all relations, can in the nature of the case donate no very distinctive character to knowing, though knowing is surely one of the most peculiar and characteristic facts of the known world. And on the other hand it seems to approximate all other cases of togetherness in the universe to knowledge, which at the least goes against a natural instinct of belief; so that the table, for example, 'knows' the inkpot which presses upon it.[2] It is true Mr. Alexander goes on to say that it is only when one of the related facts is a mind, that there is knowing *in the proper sense.* But if this means that it is purely a misuse of words to follow the lead of the definition, and speak of knowing in these other cases, it would seem to throw doubt on 'togetherness' as an adequate analysis of the knowing relation.

There are indeed certain things in Mr. Alexander's

[1] *Cf.* Russell, MIND, xiii., p. 510. [2] MIND, xxi., p. 318.

exposition which might appear to point to a different conception of the relation, such as would, if adopted, give it a more definite content. The more he insists that awareness is an activity of the physical organism, and finds in it a describable character called 'direction,'—provided this direction does not, as mostly it would appear to do, reduce merely to the varying character of the 'objects' of which we are aware,—the more one might be inclined to suppose that there lies in the background of his mind an altogether different notion of consciousness, with reference to which the preceding remarks would be more or less irrelevant. But the conception of consciousness as a physical act of the *organism* 'directed' to a particular portion of the environment—the doctrine in general of the American realists—he plainly does not intend for the most part to be interpreted as meaning.

There is still another possible interpretation of the situation, which is the one I should myself adopt. Indeed it is the only way that enables me to understand some of the things that Mr. Alexander has himself to say. But as it would mean the abandonment of most of his distinctive doctrines, I do not of course suppose that he would accept it. I may introduce it by noticing a difficulty which Mr. Alexander himself feels, and with which he wrestles in a number of places, never with entire success. It is the difficulty of understanding how we can know the mind, or the 'subject' side. Apparently we do know it, for we can talk about it, and make various statements about what it is and is not. But if we *define* knowledge, with Mr. Alexander, as the compresence of awareness with an object or qualitative content, and if the awareness, not the object, is the 'mind,' then apparently the mind cannot be known. If the self were a presentation or object it would be a sensible thing, which it cannot be.[1]

The only way I find that Mr. Alexander escapes this difficulty is by introducing without notice a new and undefined sense of the term 'knowing'. "I cannot," he says, "have knowledge *of* my mind, in the sense of making it an object of contemplation, for that would mean that my mind could act upon itself. But I can know my mind, for I am my mind, which is an experienced experiencing, though not an experienced object."[2] Now the only way to make sense of this is, I am convinced, to recast entirely our definition of knowledge, taking care in the meantime to avoid another and very subtle ambiguity. Mr. Alexander's trouble is due to two things,—first, that in knowledge the object must on

[1] *Proc. Aris. Soc.*, 1910-11, p. 18. [2] *Ibid.*, p. 19.

his showing itself be identically present, and, second, that all the qualitative character of reality is placed on the object side. Accordingly the self cannot contemplate itself, alike because there is nothing to contemplate, and because it cannot dirempt itself and be present in two forms at the same moment. But if we were to suppose that normally knowledge is, instead, *mediate*—a knowledge of something *not* present in experience in person, and if the 'experiencing' which constitutes the self had specific qualities that could be reproduced, there would be nothing against the possibility of presenting some *past* phase of the mind to knowledge or contemplation, and so getting the information which we unquestionably do possess about it.

It still would remain true that we do not know the self *at the moment of* its experiencing; if knowledge is mediate, the self as knower is, concretely, outside the field of knowledge. We can know it *as* existing; but its actual felt presence is no longer there in the fact which has become a known object. But now I agree with Mr. Alexander that there is a different sense in which we yet may properly be said to be 'aware' of this *present* self; it can be directly 'experienced,' or, as Mr. Alexander puts it, be 'lived through and enjoyed,' even though it cannot be contemplated or known. What Mr. Alexander calls 'living through' is, however, exactly what I should mean—and I believe I am representing here a perfectly familiar thesis—by the 'existence' of the mental as a 'psychic state'; it is just this presence in the form of immediate feeling which constitutes psychic existence. If by awareness we understand, then, no more than immediacy of feeling existence—a sense of the word easily distinguishable from contemplative and attentive 'knowledge of,'—the full sensation, quality and all, may intelligibly be called a case of 'awareness'. And I am at least, for this distinction, asking no other privilege than Mr. Alexander claims when he talks of 'enjoyment' as 'knowing itself'; indeed it seems distinctly easier to justify experiencing as 'enjoyment' on the theory which admits qualitative distinctions in the experience enjoyed, than when all such distinctions are placed outside the enjoyment in the object. For I really do not see how one is to be able to distinguish enjoyments which have no inner qualitative distinctions.

Among American realists, or near-realists, the act of awareness is, so far as I know, universally repudiated; and a different answer is needed therefore to the question, What is the nature of the relationship to which consciousness is to be reduced? And to repeat, the primary meaning of this

question grows out of the demand that the *content* of knowledge shall be so identified with 'things,' as to eliminate the need for a new 'subjective' fact, or mental state, of a sort differing in nature and existence from the objectively known world. To this end the object itself is conceived as becoming an object of knowledge by entering into a specific new relationship, either to other objects which constitute along with it the field of consciousness, or to some further fact—the self, or organism, or knower.

It is the first of these alternatives which James explicitly adopted. According to James' doctrine, the universe is a collection of bits of 'pure experience,' capable of entering into a variety of relationships; and one of these relationships is that of knowledge. One experience, namely, is known by another,—for here the relationship, holding as it does entirely between the objects of knowledge themselves, does not permit any knower outside the conscious stream,—when it is connected with it through a series of transitional experiences that lead up to it or to its vicinity, this very same bit of reality being however conceivably, at the same moment, in relationship to other facts such as constitute it a physical object, or to transitional experiences which make it an element in other streams of consciousness, or other minds.

For James also, it is to be noticed, all the qualitative content of the world of appearance is saved, since each identifiable aspect of this world is a bit of pure experience, and each experience is in its nature precisely what it is *experienced as*. In such a theory, however, he is by no means as far from the traditional notion of consciousness as his words might lead us to suppose; indeed he seems on the contrary inclined in a certain real sense to reduce the entire world to consciousness. Since the immediate fact of experience is not, as with Mr. Alexander, split in two, and the 'subjective' given an independent and quasi-existential standing, it is still open to maintain that the entities which enter into the relation constituting knowledge are in themselves essentially 'psychic' stuff. It is plain that in his latest writings James does show a strong leaning towards pan-psychism; and the fact that he continues to call the ultimate constituents of reality pure *experience*, is corroborative evidence. And now the verbal obscurity here is largely cleared up when we recognise that what James has really been thinking of is not so much 'knowing' after all, as the presence together of elements in a *unity of experience*. And this explains why he is so ready to shift the meaning of consciousness back and forth between knowing and the 'self'; what mainly he is trying to show is

that the elements of experience may get into an experienced unity, and be felt as *mine*, through a mere combination among themselves, and without appealing to any further agency called a self. With this in view, it is a secondary matter whether the elements themselves be regarded as in their own nature 'psychic' or not. It appears to me that James was much too hasty in assuming that the unity of *knowledge* is an adequate paraphrase of this unity of experience as *mine*. Surely much is present within the unity of the self which does not deserve the name of knowledge; and it would have been much better therefore if he had put the problem explicitly in terms of 'felt unity,' rather than of 'knowing'. But even then, to return to my main point, it would be possible to mean by consciousness the psychic (felt) character of the elements, rather than their 'together' aspect, or the conditions under which they form a unity; and if one *did* mean the first, James' polemic would leave him quite untouched.[1]

Accordingly when we eliminate verbal ambiguities, James does not turn out to be in sympathy with the neo-realistic endeavour to eliminate the 'psychic,' whether or not he is willing to call this 'consciousness'; though he does wish to get rid of any difference between 'physic state' and 'object' in the knowing experience (epistemological dualism). Even this, however, it may be questioned whether he is altogether successful in doing. The facts suggest at least two limitations on the satisfactoriness of his theory that knowledge is a series of transitive experiences, issuing in a perceptual experience which *is* the object known. Strictly, if we follow James' account, we have no right to talk of knowing an object, in the sense in which this involves a conscious recognition of it, until the object is there bodily in experience. And then the earlier stage will no longer be present to constitute it known, and it will be no more than itself 'enjoying'

[1] I do not mean to imply that I myself should admit that experience is a combination of pre-existent 'conscious' feelings, though I see no reason to deny that there may be conditions leading to the appearance of 'pure' feelings which do not, in James' sense, belong to a complex unity. But the actual human experience which we know it seems to me far more reasonable to take as a flowing stream of existence which arises and passes away in time, and whose unity at any given moment can be broken up into parts only by an artificial abstraction. Indeed it strikes me as most remarkable that so enthusiastic a defender of the 'flowing' philosophy, who is everywhere emphasising the claims of novelty and genuine creativeness, should have committed himself in his epistemology to a doctrine which, by turning the entire content of the inner life into quasi-substantive bits of stuff, almost equals Spencer in reducing history to the continual reshuffling of more or less permanent elements or counters.

itself, on a par with any other bit of pure experience that one might select; so that 'knowledge about' would appear to be impossible, and 'knowledge of acquaintance' has no right to the name. At best,—unless knowing be regarded as not in itself an experiencing at all, but only the impersonal *fact that* some later experience is on the way,—the knower can only be the pure experience just preceding, and one experience can only know its *immediate* successor; but this is wholly out of relation to what concretely we mean by knowledge. It is absurd to say that I do not know a future event of which I am thinking, but only the first step necessary to lead me to this event, which first step then knows the second, and so on. But now if we recall James' *real* problem, it is possible also, I think, to see why the absurdity fails to strike him. For if we are trying to explain, not, after all, how one thing can know another, but how it can be joined to another in an experienced unity, then of course it *is* only two immediately contiguous elements that thus flow together. But this only accentuates the difference between being felt together, and thinking about or knowing. As a matter of fact, all non-perceptual knowledge, at least, *anticipates* the *actual* objects, which it yet may really 'know'; and consequently it involves just that dualistic transcendence of the object to the knowing 'idea' which James repudiates.

In Prof. McGilvary we have an ingenious attempt to develop James' general position along more strictly realistic lines; and an examination of his argument will, I think, help to enforce what I have just been saying. He starts with a criticism of the denial of 'transcendence' not unlike that which I have just suggested.[1] The logic of James' own doctrine requires knowledge of a world of reality with which 'consciousness' is by no means coextensive—when, that is, the perceptual presence of objects is prevented or delayed, —although these extra-experiential objects are capable of entering into consciousness on occasion, and are believed in on the ground that they are necessary to extend and complete the field of experienced fact. Apparently, then, though Prof. McGilvary so far as I am aware does not say so explicitly, and even at times definitely implies the contrary, this should lead him to abandon entirely James' identification of consciousness with knowing. Consciousness can hardly mean just knowledge, if it is possible to 'know' that which at the moment is not in consciousness; the things of which we are conscious are no more than an island in an immense

[1] *Phil. Rev.*, xx., p. 137 ff.

ocean of fact to which knowledge can attain. What instead we *are* to mean by consciousness is this smaller world of 'experience for a self,' which excludes many entities at a given moment as not present in the peculiar relationship of experienced unity.

In so far I am at one with Prof. McGilvary. I also should hold that the field of consciousness, in its first intention, is not that of knowledge, but coincides, rather, with the content of an individualised experience in the setting of a larger known world; and I should hold that there is a unity to this field which can only be 'felt' from the inside. What I need to be shown, is the propriety of describing this situation in terms of 'objects' which in themselves are non-psychical, plus a new and unique relationship.

And first as to the nature of the supposed relation; for Prof. McGilvary frankly rests his case upon the ability to locate and specify this. I have tried sincerely to get a glimpse of the precise fact which he is endeavouring to point out, and I think I have succeeded; but if so, the result does not seem to me favourable to a 'relational' theory of consciousness. For what I find is either a relation which defines something not necessarily identical with 'consciousness' in any natural sense of the term, or else it is *not a relationship at all;* and I rather suspect that Prof. McGilvary moves back and forth between these two positions.

There are two terms in particular through which he attempts to identify the relationship he is after—*unity*, and *feeling*. If we define consciousness as a 'way of being felt together,'[1] we have the two in conjunction. But such a phrase is not entirely unambiguous; 'felt,' that is, might be intended to characterise the objects that are together, or only the 'togetherness'. Now, strictly, if consciousness is to be reduced to relation, the last ought to be the meaning; the relation is itself a specific stuff characterised as feeling, which added to other specific stuffs makes a thought out of what it is added to.[2] Consciousness thus will mean the felt togetherness of things, or, as an alternative phrase, their 'experienced' togetherness; since feeling things together, and experiencing them together, are words that express precisely the same fact.[3]

But concerning this I should want to make two remarks. And first, it is a strange way of *defining* experience to say that it is an experienced relation. Of course whatever you

[1] *Jour. of Philos.*, viii., p. 524.
[2] *Ibid.*, p. 515. [3] *Cf. ibid.*, p. 524.

assume as belonging to experience is experienced; but that presupposes, rather than defines, your concept. Unless then we are to have a circular definition, it must be the 'togetherness,' rather than its 'feltness,' which constitutes experience. But togetherness plainly is not the specific relation we are after, for it attaches to many things that are not consciously experienced.

But now in the second place, as has been remarked before, the relation of unity or togetherness is in any case constitutive rather of the concept of the 'self,' than of the concept of 'consciousness'; what most unequivocally has its limits defined by this felt unity is the content of an individual life. Now it is true that such limits may also be regarded as the limits of experience or consciousness; I should agree that they ought to be. But it does not follow that because the empirical self is coterminous with felt experience, that the two concepts are therefore definable in the same manner. It is quite possible that, though felt unity be fundamental in the concept of a self, unity *can* be 'felt' only when the contents or objects entering into the unity are of a particular 'psychic' sort; and that their psychical (or conscious) character needs accordingly to be defined independently of the unity into which this special kind of content can enter.

Now if this were so, it would seem that 'feltness' would need to be interpreted as belonging also to the *content*, and not simply to the togetherness. And this appears to me actually the case; there *is* a kind of reality whose existence has that felt immediacy which constitutes the psychic, or experience stuff. But *if* this interpretation is adopted, then consciousness no longer is a *relation*. As something that characterises the content as such, not a connexion *between* content, it is precisely the doctrine that consciousness is a form of existence. When accordingly Prof. McGilvary speaks of 'feeling' as a unique kind of relation that obtains among certain natures, a *way* in which things are together with each other, and of experience as a unity of things present in the way of immediate *feeling*,[1] it seems to me that in the interests of a theory he is falsifying a true fact. The fact is, that presence in the form of immediate feeling constitutes the 'conscious'; the falsification lies in supposing that 'feeling' can be turned into a *relationship*. Surely of all substantive facts feeling is the most stubbornly so, and the least capable of being attached externally as a relation to the felt content. I can only explain Prof. McGilvary's

[1] *Jour. of Philos.*, p. 518.

untroubled acceptance of it as such, by supposing, again, that in talking of a felt unity, he confuses the *feeling* with the *unity*, which last *is* of course a relation.

And now the alternative *non*-relational interpretation seems to me to preserve all the good points in Prof. McGilvary's contention, while it certainly avoids some difficulties. Thus for example, for Prof. McGilvary,[1] ideas and images, equally with percepts, have to be considered as objective and non-psychological entities passing in and out of consciousness, with the—to the neo-realist concerned to explain error—useful, but surely rather doubt-provoking property of actually occupying space, though without being space monopolising. This is an ingenious construction certainly, and logically not impossible; but I cannot help feeling that it is one of those works of logical artifice, so common in philosophy, which one has to put himself into a special frame of mind really to believe. Meanwhile I may note one advantage belonging to the existential theory, that has been previously implied; it enables us to give a clear meaning to 'felt unity'. So long as we are trying to *define* experience by such a phrase, 'feltness' has no sense which does not involve a begging of the question. But if we assume instead that feltness is a form of immediate *existence*, and that it is such 'feelings,' in a certain unitary complex, that constitute a self, the immediate 'sense' of unity would also be characterised by feltness, since, as an aspect of experience, it must itself also be assumed to be the feeling sort of fact that alone can enter into the life of a self.

In turning next to Prof. Woodbridge's definition of consciousness as the relation of 'meaning,' I am handicapped by a difficulty in assigning to his own account of the matter a sense precise enough to give me confidence that I may not be misinterpreting him. His criticism of traditional doctrines I can largely understand and even sympathise with, though I find here, as in James, an unnecessary confusion between the concept of consciousness, and the 'receptacle' notion of a self or mind. For one who has already dropped any existential distinction between mental states or ideas, and objects, it is natural to interpret the presence of these objects in a 'mind' as a case of relational unity, rather than to suppose them 'contained' inside some other object; but the polemic against this latter notion will hardly interest the philosopher whose concern is wholly with the denial of a dualism. Prof. Woodbridge's own proposed substitute, however, appeals to me rather as 'thrown out' in a large

[1] *Cf. Philos. Rev.*, xxi., p. 152 ff.

suggestive way, than as revealing very clearly its own logical source and compulsoriness. And one form in which my difficulty might be put is this: Is the relation supposed to be one between the individual objects of consciousness themselves, or between these collectively, and a further fact? In most of his express statements the first would seem to be the true interpretation. Thus consciousness is placed on a level with such other ways in which objects are related to one another as time and space.[1] And indeed in what is perhaps his most explicit definition, we are expressly told that meaning is equivalent to *implication*, or *logical relation*.[2] In line with this is a passage which speaks of consciousness as the one relation which makes possible an *immaterial synthesis* of objects[3]; and the same interpretation would give meaning to the claim, otherwise not very easy to understand, that the 'meanings' of the solar system, though not the solar system itself, can be condensed in a book.[4]

But then of course consciousness is *not* logical implication in general. Such a thesis has no plausibility whatever; and Prof. Woodbridge in the end evidently does not intend to maintain it. Is meaning then some particular *form* of implication? Apparently it must be, though *what* form it is we nowhere find stated in plain terms. The choice of the word however, and most of the illustrations given, suggest only one natural answer—that consciousness, namely, is *teleological* implication. Thus it is exemplified in the way in which water 'means' the quenching of thirst.[5] Other examples, it is true, seem more ambiguous. When we are told that ice means that it will cool water, or that building materials mean the future building,[6] it is a little difficult to distinguish meaning here from the bare causal relationship; and this would clearly take us outside the 'conscious' realm. But since both houses and ice-water have a close connexion with human ends, we may assume that such ends are implicitly in mind. And the matter seems settled when we find it expressly declared that sense qualities become indexes of a variety of possible *reactions*, and *thus* are connected in the relation of implication.[7]

But now this ought, I should say, to make it necessary to recast somewhat the earlier statements of the doctrine. For it now appears that consciousness is, not a relationship between objects, but the relation to a further fact which is not

[1] *Jour. of Philos.*, ii., p. 120.
[2] *Ibid.*, vi., p. 449.
[3] *Garman Studies*, p. 160.
[4] *Ibid.*, p. 160.
[5] *Psychol. Rev.*, xv., p. 397.
[6] *Garman Studies*, p. 159.
[7] *Jour. of Philos.*, vi., p. 454.

as such a content of consciousness at all—the organism. And this accounts for the way in which we find Prof. Woodbridge suddenly talking about the *body* as for some reason required to form a 'center' for the relation of consciousness,[1] though there is nothing whatever in his first formulation to call for such a center, or explain its rôle. I am not implying that there is, or need be, any very fundamental inconsistency here. But there is at least an unfortunate ambiguity in the phrasing, in that consciousness is used, without notice, in two variant ways. It is the difference, again, between a definition which involves only a field of known objects, and one which takes in the underlying conditions that bring these objects together; and this last is clearly the more fundamental. It is in the former sense that Prof. Woodbridge seems to be trying to define consciousness when he talks of the relation of meaning or implication—a relationship among the objects themselves. But this definition becomes doubtful when it is subjected to examination. It is not the mere *logical fact that* objects have a teleological or representative character—all that belongs to them as part of a logical system of implication—which constitutes them facts of *consciousness;* not only is it unnecessary, if we are to be aware of a thing, that we should be aware of it *as* in this particular relation, but for the neo-realist at least, I should suppose, a teleological scheme is just as subsistentially real *out* of consciousness as any other logical scheme. What brings objects together in consciousness is, rather, a relation supervening upon them—a common relation to another and non-logical reality, the physical body. But then we naturally find ourselves talking of consciousness in a *new* sense, as a *complex* of the objects *of* consciousness, and of that which is conscious of or knows them. Consciousness now becomes, not meaning or logical implication, but a 'result of the interaction between organism and surroundings'; and consciousness as a field of objects is no longer an independent relational scheme, but something which belongs *to* the organism.[2] And how the concept of consciousness in *this* sense ever could have been derived from an analysis which ignores the organism,[3] I cannot at all see; it is much easier to suppose that Prof. Woodbridge has unconsciously shifted his ground. Consciousness is now, in other words, the *mind*, in the sense in which this implies a knower as well as something known. And it only remains to estimate the plausibility of a thesis which asserts that whenever any physical organism through

[1] *German Studies*, pp. 161, 165.
[2] *Jour. of Philos.*, vi., pp. 449, 450; ii., p. 123. [3] *Ibid.*, vi., p. 449.

its sense organs and nervous system responds to the surroundings, the complex fact becomes forthwith, without the addition of anything new, what we are accustomed to call a conscious mind.

It would appear, then, that Prof. Woodbridge's 'meaning' is only an unnecessarily puzzling formulation of the 'behaviouristic' theory of consciousness to which later neo-realism gravitates. And here at last we have a thesis which might seem at any rate clear-cut and understandable; the relation which constitutes consciousness is a relation between a specific fact, the nervous organism, and other specific facts in the environment to which the organism actively responds. The content of consciousness is thus a cross-section of the world on which, in Prof. Holt's metaphor, the searchlight of the organism plays, and the 'mind' is the unity of the reacting body and its objects.

We know what the two related facts are, as I say; and we know also the relation, *if* we keep within the universe of discourse in which science naturally moves. We know it, that is, in so far as the response is definitely a physical and causal reaction to a part of the physical environment; the relation then becomes intelligible to the degree in which physical interaction anywhere is intelligible. But the more we acquiesce in the ultimate metaphysical issues for which neo-realism stands, the less satisfying is the conception likely to appear to one who is not already a convinced partisan. For it is not an ordinary causal relation between two physical facts, wholly or even chiefly, that explains the conception of conscious content which the neo-realist entertains. The environment is only in small part physical in any natural meaning; it is made up also of events past and events future, of mathematical equations, logical formulæ, ethical and æsthetic ideals, creatures of imagination, hallucinations and sense illusions. Now I do not affirm that it is totally impossible to manipulate this complex and puzzling situation in the way the thesis demands; but I do claim that the path is by no means so plain and open as the neo-realist philosopher assumes, and that his short and easy method with unbelievers, which takes for granted a self-evident identity with the biological notion of response, is unfortunate if he really wants to convince them. I grant willingly the *fact* that we react cognitively in *some* sense to all these things. But it also appears to me that the fact necessitates a considerably more elaborate machinery to account for it than biological science supplies. It is only when we go on to *falsify* the *apparent* fact, through ignoring the plain distinction, for common sense, between having an idea in mind,

and acting upon it, that we find ourselves unambiguously inside the realm of physical science, and in consequence are able to get a specific relation which is not merely verbal—the relation of physical interaction. But this new relation, as I say, in becoming specific, is also narrowed in extent, and applies in any self-evident sense only in the case of physically existing objects.

Accordingly we are confronted by what may appear to be a difficulty. Either behaviourism leaves out, as materialism has always done, essential aspects of the universe which we know, or else, while allowing them to remain, it yet refuses to admit some of the conditions which naturally they seem to imply. I find it impossible to understand, that is, in what sense behaviourism can continue to believe in that qualitative variety in the universe for which neo-realism originally stood sponsor; the disposition shown by Prof. Holt to explain 'quality' away, seems to me far more consistent. For surely colours and smells and tastes *as such* do not belong to the explanatory apparatus of the physical scientist; and since the whole aim of the behaviourist is to acquire scientific merit, he ought not to blow hot and cold with the same breath. Let him either accept consistently scientific concepts as the scientist uses them, and then there is no epistemological advantage whatsoever that he possesses over scientific materialism as it has always existed; or if he does still maintain without reservation that smell quality, and pain quality, and the like, are actual constituents of reality, let him make this entirely clear, and not cover up in any way his scientific heterodoxy by juggling with the ambiguous connexion between such qualities, and mere molecular movements, chemical changes, or nerve vibrations. And if the qualities are *not* in the physical world, but still *are*, he may be asked to tell us plainly what right 'science' gives him to talk about a *physical* reaction to a merely *logical* fact not embodied in any physical presence, and what meaning 'response' has if *not* this plain physical meaning.

And meanwhile from the other or 'subjective' side the difficulties are even more pronounced. That the act of knowing is identifiable descriptively with a movement of an organism or its parts, is equally absurd whether it is affirmed by old-fashioned materialist or up-to-date behaviourist. Knowing is an experience plainly distinguishable from movement, even when the knowledge is of some physical object actually present and in relation with the organism; and it is still more undeniably so when the 'object' is *not* physically present, as in the case of a logical fact, an unreal or hallucinatory object, or a past or future event. For knowledge is

characterised by what is in some true sense the *apprehension of* an object, and not by *movement toward* an object. I am somehow aware of the object's actual qualitative nature, the presence of which in knowledge cannot therefore be identified with, say, a future fact not now present, even though to this future fact my act may as a matter of fact be tending.

The assertion of the causal influence of something not at the moment present to exert this influence, along with an absence of any sufficient machinery to make this intelligible, is especially prominent in the behaviourism of some of the later pragmatists. Thus Prof. Bode *defines* 'being conscious' as having a future possible result of present behaviour, embodied as a present existence, functioning as a stimulus to further behaviour.[1] I shall not stop to labour further my difficulty in understanding *how*, apart from some 'idea' of a future event, which is taboo, the future can thus influence the present. To appeal to the 'nascent activities'[2] which as a matter of fact *will* give rise to some future action, is not in the least to explain, or to justify, the claim that this future outcome *controls* conduct; the only intelligible source of control, on a purely physical basis, lies in the past which has shaped these activities to what they are, and in the present environment which determines their success or failure. All I wish in conclusion to notice is, however, that here we have still another claimant to the title of consciousness, to complicate the formulation of the problem. For what Prof. Bode starts out to define under the name of consciousness is neither the 'mind,' nor psychical stuff, nor experienced unity, nor knowing, nor knowledge content, but 'intelligence';[3] and intelligence is assumed at the outset to mean intelligent *behaviour*. In other words, we start explicitly from the standpoint of the scientific observer endeavouring to mark the true distinction between 'intelligent' conduct in an organism, and mere mechanical habit; and since the problem is already set in terms of behaviour, it is not strange that behaviour comes out in the answer. I should agree with Prof. Bode that an external description of the difference between intelligent and unintelligent action is possible, and that the difference is what he finds it to be. But this still does not settle the problem of 'consciousness' for me, unless I wilfully decline to ask certain *further* questions, which the pragmatist, by his choice of presuppositions, has succeeded to his own satisfaction in shelving, but which happen still to press themselves upon me as real problems.

[1] *Creative Intelligence*, p. 240.
[2] *Ibid.*, p. 244. [3] *Cf. ibid.*, p. 242.

IV.—A NEW THEORY OF SLEEP AND DREAMS.

By Eugenio Rignano.

Dreams have always exercised on psychologists the fascination of a great enigma. How can it be that a healthy soul gives, in dreams, the strangest, the most incoherent, the most illogical manifestations, and afterwards, when awake, performs its function again in the most normal way? that is the great problem which till now, one may say, has remained unsolved.

The cause is perhaps to be found in the fact that the phenomena of sleep and dreams have not been sufficiently considered in their connexion.

I.

The Various Theories of Sleep.

The theories of the nature of sleep are, in fact, numerous. They account for it as *circulatory* (*e.g.*, through cerebral anemia), *neurodynamic* (*e.g.*, through retraction of the neuronic ramifications or by inhibition of the cerebral activity), *biological* (*e.g.*, the sleep instinct of Claparède), *biochemical* (*e.g.*, through carbonic self-narcosis or by the action of ponogenous substances on the nervous centres), *energetic*, the most commonly held, according to which sleep is due to the exhaustion of the nervous energy expended during the day and which is restored during sleep. But all these theories fail through the following methodological principle: they proceed to the study of the nature of sleep without caring sufficiently about one of its fundamental products, which is dreaming, the characteristics of which just this nature of sleep ought to be called on to explain.

Other authors had already observed that none of the above theories could explain how darkness, silence, monotonous sounds, the cessation of interest in everything that surrounds us, cause sleep, and how it is that, *vice versa*, deep interest in a given event can put off sleep for several hours. But nobody has ever noticed the fact that neither of these theories can explain, *above all*, dreams, which denote an intense

psychical activity that all these theories ought, on the contrary, absolutely to exclude.

II.

The Non-Affectivity of Sleep and Dreams.

The mistake has been in the point of departure; that is that the psychical activity has been considered an indivisible whole which sleep ought to suspend *en bloc*, instead of decomposing it into its fundamental elements and examining which of these elements are truly suspended by sleep. Now, if we distinguish, in psychical activities, the two fundamental categories of *affective* activities (including also activities of volition, attention, etc.), and intellective activities properly so called (that is the simple evocations of sensorial elements, images), we soon see that only the first, and not the second, are suspended by sleep.

In other words, the functional rest of the soul during sleep, is only in relation with affective life. And it is natural that it should be so. In fact, however numerous the sensations or the sensorial excitements of the waking state may be, they are *very varied;* none of them, save in exceptional cases, lasts long enough or repeats itself with enough insistence to exhaust the nervous energy of their respective nervous centres; so that, whilst a given system of neurons or nervous centres is in activity for some given sensations or some given sensorial excitements, all the other neurons or nervous centres equally devoted to the setting in activity of purely sensorial elements, are completely at rest, and have consequently more time than is necessary to make up their specific nervous energy, used up in setting in activity preceding sensations or evocations. It is, on the other hand, not the same with affective activity. The daily activity of any individual is, in fact, excited and guided by a very small number of affective fundamental tendencies, which for this reason are, *during the whole day*, incessantly, or almost incessantly, in action: the farmer who cultivates his field with passion, the artisan on piece work, who intensifies his work as much as possible, the business man incited from morning till night by the ardent longing for gain, the scientist who follows with ardour the solution of given problems or the experimental verification of his theories—these all fulfil well the most varied actions, receive the most varied impressions of the external world, and even call up the most rich and changing succession of images, provided them by their experience of the past, but always under the stimulus of their respective pro-

fessional activities. Moreover, in all these individuals there exists not only always active, but also active in a way more lasting and persistent, another affectivity, which is the desire of not deceiving one's self, the fear of not acting in the most effective way, the anxiety to behave in the most becoming manner: this is, in one word, the secondary controlling affectivity, which at every turn holding momentarily in suspense the primary activity which urges to action, constitutes the state of attention with which the action itself is fulfilled, and on which depends the greater or smaller effect of this last.

Therefore, while the restitution of the nervous substance used up during the functional activity can, so far as regards the centres which set in activity the elements purely sensorial, always keep pace with their consumption, even while we are awake, because these centres are alternately in activity and consequently some rest while the others work; on the contrary, as regards centres setting in action the fundamental affectivities of the individual, this restitution cannot be effected during waking hours, because they are *continually, from morning till night, in functional activity.* The restitution can take place for them, only during the suspension of all the affective activity of the spirit, which suspension is precisely what constitutes sleep.

If the psychic functions are composed of an intellective part (sensorial and mnemonic-sensorial) and an affective part, and if only this latter gets tired during the day and rests during sleep, we begin to understand how it is that, also in sleep, one can have an intense psychic activity, constituted precisely of dreams, and how it is that these are so substantially different from the production of the mind when awake.

We will not stop now to examine how, with our hypothesis of a gradual exhaustion of the affective potential energies, which alone are always active during waking time, and with the consequence derived from this, namely, that sleep depends upon the relation between the degree of this potential affective exhaustion and the intensity of the exciting factor, that is, of the interest which the surrounding situation excites at that moment in the individual, are explained the different particularities of the production of sleep mentioned above (hypnotic influence of darkness, silence, monotonous sounds, the cessation of interest in what surrounds us, and, *vice versa*, suspension of sleep following deep interest in a given event). We shall rather set about examining the characteristics which result from our

hypothesis precisely as regards dreams, which are the psychical fundamental product of sleep.

If sleep is characterised principally by "affective silence," that is, by the suspension of all affective activities (including attention, volition, etc.), then one of the first and most fundamental characteristics of dreams will be that they are *not affective*.

This property of dreams is proved, first of all, indirectly, by the fact, already observed by so many authors, that we never dream of that which has most occupied us while awake, but mostly of insignificant or indifferent facts; and it is proved directly by the silence, in dreams, of all our longings and by the indifference with which the dreamer considers the events of the dream, even when they are of such a nature as would, while we are awake, excite in us the strongest emotions, for example when we see before us as dead our dear ones who are still living. So also we feel no shame or remorse when we commit in a dream immoral or even criminal actions; and no feeling of surprise is excited in the presence of the strangest events, as when we dream that we fly in the air or when we hear an animal speaking, nor in presence of the extraordinary metamorphoses which dreams habitually present us.

The want of surprise, the complete absence of remorse or repentance for immoral or criminal actions that we have committed in a dream, the indifference at events which should afflict us deeply, the non-existence of any real and true desire: all this confirms the thesis that the fundamental feature of dreams is, as we maintain, that of being *non-affective*. There is, however, one fact which, at first sight, might seem to contradict it: it is that, as every one knows, many dreams are violently emotional: it is enough for us to remember the commonest nightmares to be persuaded of the powerful emotions of which some dreams are capable. Now, this apparent contradiction disappears if we notice the nature of emotions and their double possible origin. In fact, while when one is awake it is the entering into an intense and unexpected activity by a given affectivity which produces a somatic or visceral orgasm, and this afterwards, according to the celebrated theory of Lange and James, is reflected psychically as an emotion; in sleep, on the contrary, it is the somatic orgasm, a violent physiological perturbation, which is first produced, exclusively as consequent on given cœnesthetic conditions. Thus an emotional state is produced without the previous existence or entrance into activity of any affective tendency; and it is this emotional state, of a purely

somatic origin, that afterwards calls up in the dream the images that are in harmony with it: we do not feel any terror because we are dreaming we have committed a crime, but we dream we have committed a crime because a visceral disturbance of some kind reflects itself in us under the form of a state of anxiety. This, in fact, is what the most clear-sighted psychologists of dreams have already pointed out.

What has made the uninitiated and even some psychologists believe that dreams, far from being non-affective, are on the contrary often affective, is the usual and deplorable confusion, on which we have very often insisted, which is made between affective tendencies and emotions, which are nevertheless substantially different in nature. Now the truth is that the dreams are frequently only *emotional*, and that they are such only from bodily or visceral causes; consequently, they do not imply at all, as initial agent, as *starter*, a preceding affective state. Moreover, the fact that the same degree of visceral trouble causes in a dream a greater emotion than during waking hours, depends precisely because, during the dream, the respective psychical repercussion finds no obstacle in the affectivities or desires which are active while we are awake. In fact, we never, while awake, find a difficult digestion, for example, causing that state of terror which it so often causes, on the contrary, in dreams.

This very emotivity in dreams, so easy and so exaggerated, further reinforces therefore the thesis of their non-affectivity; and this emotivity, co-existing with the absence of true and proper affective tendencies, constitutes, at the same time, the best demonstration that one can wish for of the substantial difference between the nature of the emotive phenomenon and the affective phenomenon.

III.

First Consequences of the Non-Affectivity of Dreams.

The non-affectivity of dreams having thus been proved, all their characteristics appear to us simply so many immediate consequences of this non-affectivity.

The rapid disappearance, for example, on our awaking, of the dream impressions, is the consequence of their having been little or not at all supported, during sleep, by an affective tendency of any kind, because everybody knows that the duration and vivacity of the remembrance of an event

depend upon the intensity of the interest with which we have followed it.

The continual metamorphoses also which the images in dreams undergo are the consequence of the fact that these images have not been kept even a moment before the consciousness by the persistence of some affective tendency which they interest.

From this also is derived the great facility with which induced dreams are brought on. While, during waking time, even the intensest external stimulations such as that of the street or of a storm, cannot detach us from the ideas that we follow with interest, the smallest stimulation, on the contrary, is enough to turn away dreams from one series of images to another, even entirely different.

But the characteristics of dreams which receive their most complete explanation from our theory of non-affectivity are above all the two fundamental ones, which, just because they are fundamental, have attracted in all times the attention of psychologists, and have always appeared to them a great enigma, remaining still unexplained: we mean the incoherence and illogicalness of dreams.

IV.

The Incoherence of Dreams.

If what sleeps during dreams is but the affective part, *ipso facto* there fails to be that evoking, directing, selective, inhibitory and connective action which we have elsewhere shown to be exercised by the affective tendencies on the current of ideas of a man who reasons.

It is useless to bring witnesses forward to prove that this incoherence, this chaos of dreams, has always been the most manifest phenomenon, remarked by all; nor can we here quote examples of dreams without any connexion, order, coherence, such as fall within the familiar experience of every one.

This unconnectedness, this want of order, this supreme incoherence of dreams, are due, we repeat, solely to the fact that, when there comes to be wanting the affective element, which, while a man is awake, is the sovereign moderator and guide of the intellective material, from this very fact there ceases to be any barrier against the rising tide of our memories, which come into action and follow each other up pell-mell, simply by the mechanical association of ideas.

A dream can therefore be defined: an entrance into

anarchical, planless action of sensory reminiscences, consequent on the absence of all active direction.

To this affective inactivity is therefore due this "dissolution of the mental ties," this "series of degradations of the thinking and reasoning faculties," this "suspension of the highest intellectual faculties," that so many psychologists have remarked in dreams.

This proves, moreover, that this "mental tie," this "thinking and reasoning faculty," these "highest intellectual faculties," consist entirely and solely in the evoking, directing, selective, inhibitory, and connective action of the affective tendencies, which are precisely the only psychical activity which in sleep is silent and at rest.

In fact the working of the sensory evocation is perfect. However different in its entirety the dream may be from the real world, all its elements exactly repeat those which are offered us by reality. The aphorism of Hervey de Saint-Denis, "Nihil est in visionibus somnorum quod non prius fuerit in visu," says in substance that the material of mnemonic reproduction is intact and that the mechanism of evocation in itself works correctly in the dreaming as in the waking state. Nay indeed, precisely owing to the absence of an activity which limits itself to evoking only what interests it, inhibiting every other image which it would consider an intruder, the association of ideas is in dreams notoriously much more varied and richer than in the waking state.

But precisely because the mechanism of evocation pure and simple continues working correctly even in sleep, dreams form the most striking proof of the error of the theory of the English associationist school, for which the simple fact of association is sufficient to account for reasoning. Many dreams, in fact, which represent the typical case of an ideation most obedient to the laws of mechanical association of ideas, must at the same time be counted among the most chaotic and incoherent. Classical in this regard, are the famous three dreams of Maury, in which the events are associated and follow each other up simply by the assonance of their respective names.

So that we can draw the conclusion that the most incoherent dream is exactly the one which most nearly approaches a purely intellective process, that is to say, a process of pure mechanical association of ideas, not influenced by the introduction of an affective element.

V.

Illogicalness of Dreams.

If the first fundamental characteristic of dreams, incoherence, flows from the fact that the primary affective tendency is wanting, and consequently also its function of calling up, selecting, inhibiting and connecting the images —which function is the one which keeps up the *thread* of reasoning—their second fundamental characteristic, illogicalness, flows from the fact that the secondary affective tendency is missing, the opposition of which to the primary tendency constitutes exactly the state of attention and gives place to the *critical spirit*.

While we are awake, this secondary tendency, the fear of deceiving ourselves, is continually in action, even more than the primary tendency; it truly has, from morning to night, not one minute of rest. If it was not continually awake, each of our actions would be a mistake, a stupidity; we should follow without any more ado, unchecked, the first casual idea which would present itself to our mind. Now, this is exactly what happens in dreams, in which the entire absence of the critical spirit is derived precisely from the blest tranquillity of the sleeper, who is not troubled by any sentiment of surprise, by any doubt, by any fear of being mistaken.

In the waking state too we often form erroneous or even absurd hypotheses, due to the pure chance of the association which presents them first to our mind, but the apprehension of having deceived ourselves, the surprise we feel at once if they lead to results contrary to our most common experience, hasten immediately to reject them and to invent others in accordance with reality. In dreams, on the contrary, *we never doubt*, whatever may be the contradiction between the images in our dreams and the teachings of our experience.

The extreme illogicalness of dreams is due precisely to this entire want of every doubt, of every fear of deceiving one's self, of all surprise in presence of events which are in striking contrast with all that which the real world presents. We turn upside down, with the utmost freedom, the best-known laws of nature. We are not at all astonished if a dog quotes poetry, if a dead person goes off to his tomb on his own legs, or if a piece of rock floats on water.

Somebody dreams, for example, that he is caught under the wheels of a train, and nevertheless he is not crushed, but is even able to raise the wagon only by inflating his chest; another, without being at all surprised, sees some workmen

occupied in sewing china vases and plates; very common is also the dream in which one flies in the air as easily as one walks in the street. Mach sees in a dream, without being at all astonished, some water coming out from a mill by a canal, and then flowing back of itself towards the same mill; and in another dream he sees a candle, immersed in a glass of water, burning tranquilly, and the products of this combustion coming away from the flame in the shape of bubbles of air, and rising to the surface.

By the very absurdity of their deductions, these dreams serve capitally to put well in evidence the fact that illogicalness consists only in attributing to an imagined experience or fact results or consequences different from those which are given us by past experience; if one immerses, for example, a lighted candle in water, it goes out; Mach, on the contrary, illogically imagines that it continues to burn. These illogical dreams show distinctly at the same time, that the want of every feeling of surprise in the presence of such absurd results, of every doubt or fear of having deceived ourselves, and consequently the absence of all critical spirit, is precisely what allows these illogical deductions to come forward and hold their place before the consciousness, while, if the secondary affectivity existed, to each of these absurd results would be opposed, as efficacious agents of inhibition, all the "antagonistic images" with which experience furnishes us, and which this secondary affectivity would then call up and sustain.

If then the incoherence of dreams is due to the want of a primary affectivity which would follow with interest the object whose vicissitudes we imagine, their illogicalness, on the other hand, depends on the absence of the secondary affectivity, which controls the respective results that we imagine must be the consequence of each of these vicissitudes. And the absence of the primary affectivity, which is the cause of the incoherence, together with the absence of the secondary affectivity, which is the cause of the illogicalness, are only the immediate consequence of the *non-affectivity* of dreams, that is, of the state of functional rest in which is the affective soul of a sleeping man, while the purely intellective part, of calling up sensations and images, persists, one may say, in the same activity as in the waking state.

The questions set in 1885 for a public competition, by the Académie des Sciences Morales et Politiques of Paris, on "The Theory of Sleep and Dreams," were: 1. "Which faculties of the soul subsist or are suspended or considerably changed in sleep?" 2. "What is the essential difference

between thinking and dreaming?" To the first of these questions we can therefore reply that in dreams the purely intellective faculty of recalling sensorial images continues to subsist, while the affective faculty is suspended; that consequently dreams are the result of *an affective functional rest not accompanied by a corresponding intellective functional rest;* in other words, they are *an ideative anarchy consequent on the cessation of all affective control.* To the second question: that thinking or reasoning is following with interest the history of an object which we imagine we cause to undergo a series of experiments, being careful to attribute to each experience the results already arrived at in the past by similar experiments, and to which these would now lead if they were actually carried out instead of being simply thought of, which implies a continual action of calling up, selecting, co-ordinating and controlling on the part of the relative affective tendencies; while dreaming is letting the mnemonic reproduction of sensorial elements get full mastery, precisely because of the silence of every affective tendency, which implies the chaotic calling up of images, in the most incoherent and illogical way, by the simple casual operation of the mechanical association of ideas.

V.—CRITICAL NOTICES.

Implication and Linear Inference. By Bernard Bosanquet. Macmillan. Pp. ix, 180.

This little book, whose value is altogether out of proportion to its size, contains the clearest and most plausible account that Prof. Bosanquet has yet given of his views on logic. The author has made a careful study of recent writers whose general position differs considerably from his own, such as Dr. Mercier, Husserl, and Mr. Leonard Russell; and much light is thrown on his own system by his discussion of theirs. In particular it is pleasant to see that at least one English philosopher of eminence recognises the importance of Husserl's work, which has been strangely neglected here, possibly on account of its extreme prolixity and its barbed-wire entanglement of new technical terms.

Prof. Bosanquet is concerned to maintain that inference is everywhere of the same general type, and that it is not subsumptive or syllogistic. The true type is explained under the name of *implication;* subsumption he calls *linear inference,* and condemns as a 'second-hand' process of argument. The book falls into three closely connected parts. Chapters I., IV., V., and VIII. explain the nature of implication; and exhibit its connexion with induction, judgment, supposition, and the contrast between the necessary and the contingent. Chapters II. and III. deal with the linear view of inference, and claim to show that most of the critics of the syllogism have never freed themselves from its domination. Chapters VI. and VII. deal with points that are somewhat less vital to Prof. Bosanquet's argument, *viz.*, the constant use of sets of three terms or propositions in inference, and the question whether logic has any special connexion with the study of minds and their processes.

The essence of this theory of inference seem to be the following. We start with some complex of related terms. This may either be actual or merely supposed. The relating relation that characterises this complex will be such that each term in the complex is relevant to all (or, at any rate, to many of) the other terms. Such complexes are what Prof. Bosanquet means by universals. I may remark, in passing, that this explains, as I had long suspected, why Prof. Bosanquet asserts many propositions about universals which seem to people brought up on a different nomenclature to be patently false. What he says about universals is both true and important when the name is understood in his sense, and false

when it is understood in the sense of *abstractum*. The only ground of quarrel that remains is that he seems to deny that universals, in the latter sense, are also real and important; but this is a matter that concerns his large *Logic* rather than the present work. Still, even when it is understood that universals are to mean complexes, it seems to me that Prof. Bosanquet's theory requires universals in the sense of *abstracta*. For I imagine that what is important is, not some one particular complex, but the characteristic type of structure of all the possible complexes of a class. This, I think, is implied by the fact that what we should commonly call the *same* complex varies its terms and their relations, within limits, in determinate and interconnected ways. This is assumed by Prof. Bosanquet, and seems to imply a contrast between the permanent general type of structure—an universal in the sense of an *abstractum* —and the determinate complex as it is at a given moment (if it be in time) or distinct instances of it (if it be timeless, as in geometry), which are universals in Prof. Bosanquet's sense.

Implication is defined as the relation which subsists between one term or relation in such a complex and the rest, in so far as their respective modifications afford a clue to one another. The position then is that if one term or relation in a complex of a certain general structure varies (presumably within the limits required for the complex to remain of the same structure), there will be correlated variations in some or all of the other terms and relations. It appears from the definition that this state of affairs is not itself implication, but is only a precondition for it. For implication it is not enough that modifications in different parts of the complex should in fact be correlated, they must further be so correlated that one 'affords a clue to' the other. Prof. Bosanquet thus agrees so far with logicians of the Russell-Whitehead type as to regard implication as a relation between terms which subsist whether a mind recognises it or not. He differs in so far as they make implication a very special relation that holds only between *propositions*. It is doubtful whether this difference is very important. I take it that the connexion between the two senses of implication is this. The proposition that asserts that such and such a term or relation in a certain complex is modified in a certain way is connected by 'implication,' in the Russell-Whitehead sense, with a proposition asserting that some other term or relation undergoes a correlated variation. The connexions of the actual terms or relations in the complex, in virtue of which the two propositions imply each other in this sense, are 'implications' in Prof. Bosanquet's sense. Thus the connexion would seem to be that Prof. Bosanquet's implication is that relation within a factual complex which is the factual correlate of implication, in the Russell-Whitehead sense, between propositions about terms or relations within this complex.

We next come to Prof. Bosanquet's use of the word *inference*. This seems to be bound up with a special theory as to the precise way in which inferences are made. His view is the following, if I

have rightly understood him. It is a contradiction in terms to hold that no proposition is true, or even to doubt all propositions. But it is perfectly possible to deny or doubt this or that proposition. Inference consists in transferring the certainty which we have that there are *some* true propositions to the truth of *this or that* proposition. All arguments thus finally come down to the form: Either p is true or nothing is true. We start from the idea of some definite restricted complex, which may or may not be actual. Within this conclusions emerge whose rejection would 'shatter' the experienced world. Thus two wholes are involved in any inference:—the restricted complex with whose terms and relations you are explicitly concerned, and the total character of reality. Your conclusion is *based on* the restricted complex, but you can only *draw* the conclusion by 'applying the complex . . . to the reality which survives and transcends any modification introduced by the complex'. Another way of putting it is that we make a joint system of the restricted complex and the rest of reality and read off the implications from it.

All this is highly figurative, and it is necessary to discuss its precise cash value. (i) If Prof. Bosanquet's view of inference is to be taken literally he has replaced the categorical syllogism as the type of all inference by a certain mixed disjunctive syllogism. This syllogism has, in all arguments, ultimately the same proposition for the second alternative in the disjunction, *viz.*, the proposition: No propositions are true. The categorical premise is ultimately the same in all arguments, *viz.*, the denial of this alternative. (ii) This would seem to involve the view that one formal principle at least is recognised on its own merits as absolutely true, *viz.*, the proposition: If p or q, and not $-q$, then p. For, otherwise, a person might admit both that if p is false, everything is false, and that the latter is impossible, and yet refuse to admit that this implies p. (iii) It is also necessary to assume the non-formal principle of inference, first explicitly recognised by Frege. Otherwise we cannot pass from recognising that the premises imply the conclusion, and asserting the premises, to asserting the conclusion by itself. (It is no answer to this to remark that in fact p is connected with q, etc.; that therefore it is a fiction to say that we finally assert it by itself; and that there is thus no need of the non-formal principle to justify this procedure. This answer would rest on the fallacy of confusing the two statements: I assert that (p is true in isolation from the premises) and I assert p, in addition to asserting the premises and the implication. I do not assert the former; but, whenever I infer p, I do pass from merely asserting the premises and the implication to asserting p itself in addition. And this needs justification. I seem to have met traces of this confusion in Prof. Bosanquet's large *Logic.*) (iv) Prof. Bosanquet might urge that he does not make use of the *general* formal principle: If p or q, and not $-q$, then p. He might say that he only needs the more restricted principle, in which

q is, not *any* proposition, but the particular one that no propositions are true. And he might say that the restricted principle is justified on exactly the same grounds as justify the denial that no propositions are true. If so, a person would be inconsistent in accepting the categorical minor and denying the implication between the two premises and the conclusion. Let us consider this position. Prof. Bosanquet holds that to deny all truth is not merely practically barren but that it is logically refutable. Such scepticism contradicts itself. I do not see why this should move the sceptic, unless he voluntarily adopts the silly attitude of combining a belief in the law of contradiction with a denial that any proposition is true. Thus I conclude that Prof. Bosanquet must accept the law of contradiction on its own merits; for clearly it is circular to accept it on the ground that the rejection of it would be self-contradictory. But, if the ground for denying that all propositions are false be the law of contradiction, it cannot be maintained that we have the *same* ground for believing 'If p or q, and not $-q$, then p' and for believing 'not $-q$,' where q is the proposition that there are no true propositions. For the law of contradiction alone will certainly not guarantee the former principle; since the law is only about any proposition and its contradictory, whilst the principle is concerned with pairs of propositions, of which the first may be about anything, and the second, being the statement that all propositions are false, is not in general the contradictory of the first.

It thus appears that, even if we accept Prof. Bosanquet's view that all inference in the end comes down to showing that unless p be true nothing can be true, a number of principles must be assumed simply on their own merits and not because of their coherence or lack of coherence with anything else. These include at least the law of contradiction, which is needed to guarantee the minor; the principle of the mixed disjunctive syllogism; and the non-formal principle of assertion. I do not really know whether Prof. Bosanquet needs to deny this. It is verbally indeed at variance with the general spirit of his writings; but it seems to me that he has only to say that such principles can be 'read off' from the system of reality as a whole, or from *any* subordinate system in it, whilst other kinds of implication are bound up, in part at least, with the particular structure of particular subordinate complexes. Possibly this is what he does mean, but I do not think he has made his position very clear on this matter.

But is it really true that all inference ultimately involves the disjunction: Either p is true or nothing is true? I find this very difficult to believe. I do not think Prof. Bosanquet can mean to assert that we could show in detail, *e.g.*, that unless the space of ordinary life had three dimensions Julius Cæsar would not have been bald. Thus he must be able to know in some *general* way that the falsity of a given proposition implies that of all propositions, without going into detail. What he appears to mean is that

we can show that if p were false some fundamental principle, such as the law of contradiction, which pervades all reality, would be false. We must remember that he is dealing with implications within subordinate systems, and so his view would be most fairly represented by putting it in the form: If the part B of the system S did not have the modification μ_b when the part A has the modification μ_a some all-pervasive and fundamental proposition about reality as a whole would be false, and, if this were so, nothing would be true. If this be the right interpretation his theory of inference contains two apparently separable steps: (i) the argument that if so and so were not true some fundamental proposition about reality would be false, and (ii) the argument that in this case nothing would be true. The two steps are not separately stated, and I cannot help suspecting that this covers one or both of two possible confusions. The first is this. It is possible to confuse (*a*) all propositions about reality, with (*b*) propositions about all reality. The laws of logic seem to be propositions of the latter kind, in the sense that they apply to and are true of reality as a whole and also any part of it. If (*b*) be confused with (*a*) the second step of the argument follows automatically from the first. I strongly suspect the presence of this confusion in several places. The other possible fallacy is this. The law of contradiction is supposed to guarantee in a special way that not all propositions are false. It is easy but fallacious to pass from this to the view that, if the law of contradiction were false, all propositions would be false. Now the law of contradiction is a fundamental and pervasive proposition of the kind mentioned in the first step of the argument. Hence a logical fallacy of the sort just mentioned would lead naturally to Prof. Bosanquet's result. The argument would be: 'If p is not true then the law of contradiction (*e.g.*) is not true, but if the law of contradiction is not true nothing is true. Hence if p is false nothing is true.' But at most what we know is that if the law of contradiction is true something is true; and it does not follow that if the law of contradiction is false nothing is true; all that would follow is that two contradictory propositions might both be true.[1]

Thus I cannot see any reason to believe that all inference ultimately rests on the disjunctive: Either p is true or nothing is true. And this distresses me the less because it is gravely doubtful whether the statement, *Nothing is true*, is either true or false. In actual fact this set of noises or marks does not stand for any proposition at all; for the theory of logical types condemns such expressions as meaningless. Thus it would be unfortunate if all inference really did depend on a disjunction, the second member of which is not a proposition at all, but a mere noise like *Jabberwocky*.

I am strongly inclined to think, therefore, that all that Prof.

[1] Doubtless if the law of contradiction were false we could not *know*, of any other proposition, whether it were true or false. But this is very different from knowing that all other propositions are false.

Bosanquet really means is that all inference involves in the end an argument of the form: If *p* were false then some proposition which is true of the whole of reality would be false. I am compelled to regard his actual statement that, if *p* were false, then no proposition would be true, as either a rhetorical expression of this or a mistaken inference from it.

I am encouraged in this belief by the fact that nothing stronger than my statement of his position seems to emerge from the interesting discussion in Chapter VIII. on supposition and the views of Mr. Leonard Russell. Prof. Bosanquet's argument here is that, however much you may explicitly suppose, you can do nothing with your suppositions in the way of drawing conclusions unless you *assert* (and not merely *suppose*) the law of contradiction (and presumably other principles of pure logic). And these are laws pervading all reality. He also argues that when the conditions of a judgment are once made explicit 'it is absolute in its challenge to reality'. 'Its truth then depends on the absence of hidden obstructions in the universe of unknown reality.' Thus, here at any rate, the connexion with reality that is demanded is not: 'This true, or *nothing* true,' but: 'This true, granted the absence of obstacles, or *the laws of logic* would be false'.

Prof. Bosanquet seems to me to be right in his main contention about supposition. Stated in terms of Mr. Bradley's distinction between premises and principles, the first part of his view might be expressed as follows: Your *premises* may be merely supposed for the sake of argument, but, if you are going to make any use of them, your *principles* of inference must be not merely supposed but asserted. This seems to me to be true; and it is not in any way altered by the fact that all the conclusions reached in systems of supposals are hypothetical. No doubt they are; *e.g.*, the propositions of any system of pure geometry are hypotheticals with the postulates as antecedents. Nevertheless there is assertion; for these hypotheticals themselves are not merely supposed but are positively asserted. It is their antecedents and consequents, taken separately, that are only supposed and not asserted. And you clearly cannot get assertion (even of hypotheticals) out at the end, if nothing but supposition is put in at the beginning. This I take to be what Prof. Bosanquet has in mind when he says that a judgment, whose conditions are once made explicit, is absolute in its challenge to reality. His second contention about supposition is less clear to me. If, in a certain system of suppositions (say, the postulates of Euclidean geometry), I can prove by the laws of logic that the postulates imply a certain proposition, *e.g.*, I. 47, what 'hidden obstacle' can there be in the rest of reality to prevent the hypothetical: 'The postulates imply I. 47,' from being true? No doubt there might be 'hidden obstacles' (*e.g.*, the non-Euclidean character of physical space, if this has any definite meaning and were a fact) to the truth of the postulates or of I. 47, taken separately. But, so long as I recognise that the postulates are only supposed, I

am not attempting to assert them or to assert I. 47. And such obstacles are perfectly irrelevant to the truth of all that I do assert, *viz.*, that the postulates imply I. 47. No doubt Prof. Bosanquet is here thinking of much more concrete systems of supposals, as his example about driving to Hampstead shows. It is obviously true that much more has to be supposed in such cases than is ever made explicit, *e.g.*, the constancy, in the main, of the ordinary laws of the material and mental worlds. The result is that your hypotheticals *are* only true subject to conditions that are not contained in their explicit antecedents. But I do not see why Mr. Leonard Russell's remedy, of supposing more, will not work here; though I do see that it will not do as a substitute for actually asserting the principles of inference.

We have now discussed Prof. Bosanquet's views about supposition, and have tried to understand what he means by implication and by inference. And we have argued that his statements about the latter must be interpreted in a much restricted sense if they are to be plausible. We have not yet seen clearly how he supposes inference—defined as the process of conferring the certainty that there is *some* truth on to some definite proposition—to be connected with implication in his sense of the word. The chief source of information on this point is Chapter IV., where Prof. Bosanquet gives a large number of examples, ranging from mathematical proofs, through inferences about social and physiological matters, to judgments of value. The principle, he says, is the same throughout as that which is involved when we argue that $2 \times 2 = 4$ or that equilateral triangles are equiangular. It is that, 'within any complex of terms and relations which is distinctly before our apprehension, connexions can be seen as between antecedents and consequents, which are necessary and relatively *a priori* so long as that complex is assumed'. In Chapter I. it is said that, even if there be no process of argument (as where we convince ourselves that two straight lines cannot enclose a space) there is something like inference. But more usually we have to 'build up the system' and then 'read off' the implications. Apparently inference is the act of reading off the implications after scrutinising the system that we are dealing with and viewing it in relation to the wider system of reality as a whole. If we can 'read off' straight away the inference is immediate; if we have first to build up the system before being able to read off the implications it will be mediate. *All* implication, we are told, is logically *a priori*. The question of our actual degree of certainty in any case depends on the distinctness of the structure of the subordinate system in itself and in its relations with the ultimate whole. Those propositions to which the name *a priori* is commonly confined are propositions in which the simplicity and abstractness of the relation concerned makes it specially easy to read off the connexion. But we are told that, in other cases,—notably religious and moral matters—what is lost in simplicity and abstractness may be gained in depth.

I must confess that I have considerable difficulty in seeing the precise connexion between the various parts of this theory. Let us begin with the statement that all implication is logically *a priori*. So far as I can see *a priority* is never defined. But evidently propositions like $2 \times 2 = 4$ are supposed to be examples where it is so clearly present that it is falsely thought by most people to belong only to them. Now I suppose that the peculiarity of such propositions is that, when you understand and reflect upon the terms and their relation, you see in the end that those terms must be related by that relation. And we do not seem to see anything of the kind when we reflect upon humanity and mortality, or on silver, increase of temperature, and increase of length. Now I take it that *part*, at any rate, of what Prof. Bosanquet wishes to assert is that this is only a difference *quoad nos*, and not a difference in logical character of the propositions $2 \times 2 = 4$ and Silver expands when heated. The subjects and predicates of propositions which are only proved by induction are bound together in reality in just the same way as those of 'self-evident' propositions. It is only a difference in the complexity of the subject-matter or some peculiarity of our place in the world that makes the apparent difference between them. This, I think, is certainly part of Prof. Bosanquet's contention; and this seems to be borne out by his rejection (in Chapter IV.) of the Leibnitzian distinction between laws that hold in all possible worlds and laws of the actual world.

Now this may perfectly well be true. I am quite sure that we always *mean* by a law of nature, such as All S is P, something more than the merely numerical proposition that 100 per cent. of S's are P's. It seems to me possible that laws of nature assert connexions between certain *bundles* of universals (in my sense, not Prof. Bosanquet's) and other universals or bundles of them; whilst laws that appear to be specially *a priori* assert connexions of precisely the same logical kind between single universals or very small bundles of them. On this view the contingency of the laws of nature does not depend on anything peculiar in the *connexion* asserted, but on the fact that it is contingent that there should be instances of just these bundles. Man and silver are highly complex bundles of universals, and it is contingent that there should be instances in great numbers of just these bundles; but it may be that the connexion between such bundles and mortality or expansion on rise of temperature is as necessary as that between 2×2 and 4. If Prof. Bosanquet means something of this kind I am not indeed sure that he is right, for I find the whole subject excessively difficult to make up my mind about; but I think he very well may be right.

But clearly, even if this be part of what he means to assert, he means much more than this. His theory is not only or mainly about the nature of the propositions which we finally reach, but about the processes by which we reach them and the attitude that we finally take towards them. And here I do feel difficulties. We

do 'read off' laws from certain systems after 'applying to them' the rest of reality and viewing them in their relation to the latter. I can ascribe meanings to this both in the case of mathematical reasoning, and in the case of induction; but unfortunately they do not seem to be the same meaning. In what is ordinarily called a purely deductive argument the system that we start with is defined by the postulates. A system of pure geometry, treated by the method of Veblen or of Whitehead, in his *Mathematical Concepts of the Material World*, seems to bear a very close resemblance to Prof. Bosanquet's partial system. We start with one fundamental relation (*e.g.*, between) and lay down its properties in our fundamental postulates. Then we 'apply' the rest of reality to it, in the definite sense that we argue from these postulates by using the laws of logic, which are laws of all reality. And there is a perfectly clear sense in which we may be said to 'read off' our results from the joint system composed of our partial system and the rest of reality. We do see the connexion between the postulates and the propositions of the system of geometry by viewing the two in their logical interrelations under the guidance of the laws of logic; and this vision in the end is a kind of immediate insight, however much mediation may have been needed to put us into a position to see these connexions.

Now let us consider inductive arguments. With nearly all that Prof. Bosanquet says in his many excellent examples I agree heartily. Induction by simple enumeration, eked out to the maximum possible extent by the laws of probability, *is*, I agree, worthless. And, in the hypothetical method, we do not put forward hypotheses *in vacuo*, but start with very definite views as to what types of hypotheses are admissible in a given subject-matter. This restriction is based on what we believe ourselves to know about the general 'make up' of the physical world and of the special peculiarities of the region of phenomena under discussion. Anyone can see this for himself, *e.g.*, who compares Mill's Methods, as offered, with the actual processes of argument that one uses in a chemical or physical laboratory. And the case is strengthened by negative instances. Why is Psychical Research so excessively difficult and unsatisfactory? Because we have at present no idea what hypotheses are reasonable and what are not, as Mr. Bradley pointed out in his classical article on the subject many years ago. Psychical Research illustrates another important contention of Prof. Bosanquet's extremely well. He says that in most inductions you cannot make a sharp separation between the particular facts of observation and the general structure of the system under investigation. Now this is exactly illustrated by Psychical Research. Everybody accepts observations by competent physicists, even if they seem to be startling and revolutionary. We feel sure that they will fit into the system somehow and that the methods used are appropriate to the investigation of physical systems. But people view even the alleged *facts* of Psychical Research with a

scepticism that they never think of applying to ordinary physical phenomena. No one makes it an objection to photography that, at a certain stage, the operator goes and muddles about in a highly suspicious way in a dark room into which nothing but red light, and not much of that, is admitted. But we feel that precisely the same circumstance makes very much against Dr. Crawford's experiments with Miss Golligher on telekinesis. The reason is obvious. Photography does and telekinesis does not fit in with our view as to the general 'make up' of nature; we understand why a plate must be developed in red light and semi-darkness; we do not see why Miss Golligher could not move tables without contact under an arc lamp. [I ought perhaps to add that I use these illustrations simply to bring out Prof. Bosanquet's points, and not to condemn Psychical Research. Its special difficulties ought to act as a challenge to scientists; and I have not the slightest sympathy with the ignorant pontifications of biologists of the Ray Lankester type, or with the more respectable but to my mind equally mistaken objections of the Dean of St. Paul's, who seems to think it a sufficient reason for not pursuing the subject that mediums are often of doubtful moral character, that the results do not point to a particularly cheerful or desirable kind of future life, and that psychical research (in common, I may remark, with alcohol, tobacco, politics, and religion) is liable to have bad effects on persons of weak nerves and intellects.]

The sense then in which we view our partial system in its relations with the whole and read off our implications from the joint system is, in inductive matters, the following. We believe ourselves to know a good deal about the 'ground-plan' of the region of phenomena,—electricity, life, etc.—of which we are investigating a particular instance. We also believe ourselves to have a sound general knowledge of the ground-plan of the physical world as a whole, of which this special region forms a part. This knowledge suggests hypotheses to us and limits very greatly the hypotheses that seem worth consideration. And, unless this were so, induction would be impossible. Now Prof. Bosanquet evidently regards *this* process of forming a joint system and reading off implications as being essentially the same as that which we have already illustrated in purely deductive sciences like pure geometry. I should very much like to believe that he is right, but I do not feel at all certain that he is. Most of the supposed knowledge, that is always at the back of our minds, about the general ground-plan of our particular region and of nature as a whole, has been handed down to us from earlier investigators. No doubt each generation has added something to it, and we may hope to pass it on to our scientific descendants in a slightly purer and deeper form. But I cannot see that ultimately it rests upon anything but induction by simple enumeration, or that now or at any past stage it has had a trace of the self-evidence of the laws of logic or of pure mathematics. I grant at once that at no stage have men in fact

argued explicitly from simple enumeration alone or put forward hypotheses freely *in vacuo*. But I should suppose that the cause of this is that, long before scientific investigation started, and probably in a pre-human stage, fixed ideas (though very crude ones) as to the general ground-plan of nature were formed in us by the actual preference which nature has so far shown for a comparatively few kinds of substances and for a comparatively regular behaviour. I am not making the mistake of arguing that because our beliefs started in this way they are false. All that I assert is (*a*) that this seems sufficient to explain how we have come to be in a position to make inductions, and (*b*) that when we come to scrutinise the results from a logical point of view we can see no self-evidence in them, and no evidence for them except induction by simple enumeration, concerning the weakness of which I entirely agree with Prof. Bosanquet.

I suppose that Prof. Bosanquet would answer that you cannot expect these more concrete laws to get the same clear self-evidence as the highly abstract principles of logic and mathematics, but that what they lack in clearness they gain in depth. I am not at all sure that I understand this doctrine; which also appears in the earlier chapters of Mr. Bradley's *Essays on Truth and Reality*. In some places Prof. Bosanquet seems to argue that mathematical propositions gain their clearness from the fact that to deny them involves almost at once a denial of the law of contradiction. But obviously this cannot account for the kind of certainty possessed by the law of contradiction itself, or by those other principles of formal logic which have to be used in proving that the denial of any given proposition p (other than the law of contradiction) would lead to a denial of the law of contradiction. Yet this is precisely the kind of certainty that mathematical axioms themselves seem to possess. Since then there is a whole class of propositions which are certain, and whose certainty *cannot* be due simply to the fact that the denial of them leads in a few steps to a contradiction; and since mathematical axioms seem to possess exactly the same kind of certainty as these propositions; it seems doubtful whether the certainty even of the latter can be explained as Prof. Bosanquet claims to explain it. As to the other propositions, whose denial does not lead immediately to contradictions, but to the rejection of something 'deeply rooted' in reality, I am not quite sure what is to be said, because I do not clearly understand the phrase 'deeply rooted,' which is of course metaphorical. Does it simply mean that we should have to reject a great many interconnected propositions that we do not think of doubting? If so, the question will be: Do these propositions, however numerous and closely connected, seem to be so obviously true that it is impossible to reject them? After all, there are wide systems of mutually confirmatory errors; it would be highly uncomfortable to have to give them up, but this is not a logical ground in their favour. Or do 'depth' and 'rootedness' have some other meaning? I suspect the moralistic flavour

of these phrases, and cannot help wondering whether it may not lead to the fallacy of supposing that, because certain propositions have ethical value, they must *ipso facto* have truth-value too.

It may be said that all the criticisms that we have passed on Prof. Bosanquet's theory of inference are really refuted by him in Chapters II. and III., where he deals with the linear conception of inference. Let us now turn to this subject. Prof. Bosanquet holds that the people who think the syllogism the only or the main type of deduction, and the people who base induction on simple enumeration, commit two forms of a single fallacy.

(i) *Syllogism as the type of all deductive reasoning.* Prof. Bosanquet makes two objections. (*a*) The syllogism will not allow you to particularise your predicate as you learn more about the details of the subject. Yet we constantly do this in deductive arguments. He instances the deduction of the moon's motions from the law of gravitation. Here, I think, he is certainly right. But he does not tell us in detail what the line of argument is here. It is therefore possible that he is right in denying that it is syllogistic and wrong in holding it to be an instance of inference in his sense. It will be worth while then to consider what we really do when we deduce the moon's motions from the law of gravitation. In the first place, I suppose that the argument does have one characteristic that Prof. Bosanquet objects to in the syllogism; it does use a 'borrowed premise'. A person working out the moon's motions does now take over the law of gravitation as an otherwise established fact, and does not 'read it off' from the moon's motions. We also 'borrow' the laws of motion, the laws about the composition and resolution of forces, and the rules of arithmetic, algebra, and the calculus. The peculiarity of the reasoning is that one premise, the law of gravitation, states a quantitative relation between *any* values of three sorts of variables, *viz.*, any pair of masses, any distance, and the mutual accelerations. The 'predicate' is able to be 'particularised' in accordance with the special character of the 'subject' because the premise is about the *correlated values* of sets of variables; whilst, in the ordinary syllogism with a major like All M is P, the major is simply a statement about a *conjunction* of attributes, with no information about their correlated values.

The principle of reasoning used is that what is true for *any* values of a set of variables is true for definite given values, such as the masses of the moon and earth, and their distance. The detailed deduction is carried out by using the laws of motion, themselves propositions of the same peculiar kind as the law of gravitation; and arguing in accordance with the laws of pure mathematics. Certainly this is not syllogism, but it seems equally unlike inference in Prof. Bosanquet's sense. It uses borrowed premises; it argues in accordance with self-evident formal principles; and—in so far as one can talk about subjects and predicates at all—the principle according to which the predicate is varied to fit the variations of the subject is part of the content of the premises.

How is this process related to syllogism? Prof. Bosanquet quite truly says that it is a mistake to suppose that the formal principle of the syllogism is used as a premise in particular syllogisms. He is also quite right in saying that in any particular syllogism we can see the connexion between premises and conclusion directly without appeal to such a formula as M*a*P . S*a*M . ⊃ . S*a*P. Thus the formal syllogism in Barbara is in general used neither as a premise nor as a principle for any particular syllogism in Barbara. Yet there is a certain analogy and a certain difference between the process of argument in the syllogism and in the determination of the moon's motions from the law of gravitation. The analogy is this. In the argument about the moon's motion an essential step is to substitute definite particular values for the variable masses and distances whose mode of correlation is stated in the law of gravitation. In the syllogism to prove that Socrates is mortal from the fact that all men are so it is indeed neither necessary nor as a rule desirable to appeal to the general formula M*a*P . S*a*M . ⊃ . S*a*P. It is not necessary, because the particular case is as evident as the general formula; it is not desirable, because to most men the general formula is less evident than the special case. Nevertheless, if we were asked: Why is the argument about Socrates valid? our natural reply would be that it is so because the argument is of the form M*a*P . S*a*M . ⊃ . S*a*P. And by this we mean that it is got by substituting the particular values man, mortal, and Socrates for the variables M, P, and S respectively in the general law. So far there is analogy. But, if we look more closely, we shall also find difference. The law of gravitation is just a premise, not a logical principle of reasoning. Substitution of constant values for the variables in it is a step in the reasoning. But the complete formal Barbara is not a premise for the conclusion that Socrates is mortal; it is a principle exemplified by the particular syllogism about Socrates. Thus the function of substituting constants for variables is quite different in the two cases. In the argument about the moon's motion it is a step that actually has to be performed in the course of the proof if the conclusion is to be reached. In the syllogism about Socrates it is not a step *in* the proof but an additional statement, which may or may not be made, *about* the proof.

(*b*) Prof. Bosanquet's other objection to the syllogism is that it borrows its premise by assumption or from a previous argument. We have just seen that this is not a *special* objection to the syllogism. Surely every argument of any complexity has to borrow premises from many sources. It seems to me, *e.g.*, that every particular application of induction borrows a whole view of the general make-up of the physical world. Surely Prof. Bosanquet does not maintain that, whenever we make an induction, we see with direct insight for ourselves that general ground-plan of nature, which he rightly insists that we use, but which has certainly been handed down to us from the reflexions and inductions of previous scientists.

(ii) *Induction and the Syllogism.* Prof. Bosanquet's reason for holding that the current theory of induction involves the same fallacy of linear inference as the current theory of deduction seems to be as follows. This theory of induction starts by observing conjunctions between particulars A_1 and B_1, A_2 and B_2 . . . A_n and B_n. It then formulates a general law connecting A with B. And it then professes that all further anticipation about future A's and B's or inference about past or distant ones is made by subsumption under this law. The law, supposed to be established by induction by simple enumeration, is thus simply 'borrowed' in dealing with any subsequent particular case, and the particular case is subsumed under it. Prof. Bosanquet's alternative is well summed up in the following quotation: 'The difference is that between going from a presupposed connexion to a new case taken to fall under it, and determining a conclusion from a system of relations which, *in the moment of determination*, is apprehended as making it inevitable' [p. 24. My italics]. So far, the connexion between traditional induction and linear inference seems to consist, not in an analogy between these processes themselves, but in the fact that the results of induction are used as major premises for syllogisms. *Any* view of induction that makes it establish general laws, by whatever means, might lead to this result over the subsequent application of the laws. But Prof. Bosanquet means to assert more than this; he thinks that the *special* theory that induction proceeds by analogy or simple enumeration reduces induction itself to linear inference. Moreover, the quotation just given strongly suggests that he does not think that the object of induction is to establish general laws, but rather to exhibit directly the connexion of particular cases. If this be so the subsequent linear application of inductive results *may* fairly be laid at the door of the traditional theory of induction itself; for, if that did not (erroneously, as Prof. Bosanquet would hold) claim primarily to establish general laws, it would be under no temptation to be lured afterwards into syllogism and linear inference.

Now I must confess that it seems to me perfectly clear that induction—and not any special theory about it—does claim to establish general laws and not to offer direct insight into special cases. And it seems to me equally clear that we do afterwards 'borrow' these laws and use them deductively for dealing with special cases. The sciences of physics and chemistry, *e.g.*, are full of general laws such as Maxwell's Equations, Ampère's Rule, Lenz's Law, the Laws of Reflexion and Refraction, and so on *ad nauseam*. And in dealing with special cases we do 'borrow' these laws and argue deductively from them and the special values of the relevant variables which determine our special cases. The example discussed above about the law of gravitation and the moon's motions seems adequately to illustrate this. I admit that no theory of induction that I am acquainted with seems to me to explain satisfactorily how induction justifies our strong belief in such laws.

But it does seem to me (*a*) that if they be not somehow established by induction they are not established at all, and (*b*) that if induction does not somehow establish such laws it does nothing.

Having said so much I shall be asked how I propose to meet Prof. Bosanquet's criticisms. I meet them largely by agreement and partly by drawing certain distinctions. (*a*) The laws are not used as major premises of syllogisms, but in the way illustrated in the discussion of the moon's motions. Thus the objection that syllogism will not modify 'predicates' to fit the special peculiarities of special 'subjects' becomes irrelevant. (*b*) This peculiar *use* of the laws is rendered possible by their special *nature*. They assert, not mere conjunction or disjunction of attributes, but correlations between the values of certain sets of variables. (*c*) Such laws evidently cannot be established by the mere noticing of likeness and difference. Thus all that Prof. Bosanquet has to say against this as the fundamental process of induction has my hearty agreement. They are established by something like the Method of Concomitant Variations. This method, the only one of Mill's which really is inductive and does not simply consist of mixed hypothetical syllogisms with the definition of cause and effect as the hypothetical major, is *the* method of all advanced sciences. (Mill's account of it, as a weakened form of Difference is of course preposterous; if the two are to be compared at all Difference should be regarded as a very special case of Concomitant Variation.) There is a genuine connexion between the induction that only argues by analogy and the linear inference that can only use syllogism. The connexion is that induction which only proceeds by likeness and difference can at most establish laws of the mere conjunction or disjunction of attributes, and no use can be made of such laws except as majors for syllogisms. But there *are* other kinds of laws, and these are reached by another kind of induction, and can be used as premises for another kind of deduction. Lastly (*d*) there no doubt is such a thing as that immediate insight into special cases and special regions of which Prof. Bosanquet makes so much. The argument about $B > C \,.\, A > B \,.\, \supset \,.\, A > C$ is seen to be true with the same certainty as $MaP \,.\, SaM \,.\, \supset \,.\, SaP$. It is therefore futile, even if it be possible, to throw such arguments into syllogistic form. The difference between such arguments and, *e.g.*, syllogisms can be put quite simply and clearly. The relations which occur in the premises and conclusion of a syllogism are *logical* relations, *e.g.*, that of class-inclusion. The relations that occur in the argument about A, B, and C are not logical relations, because the entities that they relate are of a more special kind, *viz.*, magnitudes. The distinction between these relations which are and those which are not logical relations depends simply on the abstractness and generality of their fields; classes are abstract enough to form part of the subject-matter of pure logic, magnitudes are too special to do this. But *all* relations, whether themselves logical relations or not, have logical *properties*.

And the relation $>$ has the same sort of logical properties as that of class-inclusion. Wherever the logical properties of a relation or set of relations can be clearly recognised, and seem to justify an inference, we can make the inference; and it is a matter of perfect indifference whether the relation itself be or be not a logical relation. The desire to reduce every argument to a syllogism depends on two equally baseless superstitions: (*a*) that only logical relations have logical properties, and (*b*) that no logical relation except that of class-inclusion has the logical properties needed for inference. But, granting all this, I believe that the cases where we can 'determine a conclusion from a system of' (non-logical) 'relations which, in the moment of determination, is apprehended as making it inevitable' are comparatively few and simple. Prof. Bosanquet admits and asserts that we do not, as a rule, 'read off' the connexions simply from the partial system under investigation. We have to view it in the light of our knowledge of the make-up of nature as a whole. But exactly how that knowledge arose and exactly how it operates in a given case he does not in detail tell us. To me it seems clear that it is *not* 'apprehended in the moment of determination,' but is 'borrowed' from the past researches of ourselves and our scientific ancestors; and that we do not 'read off' our results by merely gazing at it and our partial system, but reach them by definite processes of deductive reasoning, which, though not syllogistic, rest upon formal principles that can be elicited and stated.

C. D. Broad.

The Intuitive Basis of Knowledge. By N. O. Lossky. Authorised translation by Nathalie A. Duddington, M.A. Preface by Prof. G. Dawes Hicks. Macmillan. Pp. xxix, 420.

The translation of this important work of a distinguished Russian realist has been ably performed by Mrs. Duddington, and Prof. Dawes Hicks supplies an appreciative, though critical, introduction. The sole faults that can be found with the translation are in connexion with certain chemical terms. On pp. 74 and 297, where Prof. Lossky is made to speak of *chlorate*, I think it is pretty certain that *chloride* is meant. And on the latter page the expression *sulphurate of calcium* is used for what an English chemist would call *calcium sulphate*.

In the Introduction it is pointed out that, whilst we are most of us realists (at least as regards the material world) in ordinary life, philosophic study in most cases leads to something very much like subjective idealism or pure agnosticism. It is suggested that this is because philosophers, in studying knowledge, have usually taken over in an uncritical way categories like substance, cause, etc., which they daily use successfully in dealing with the material world, and have tried to force the relation between minds and their objects into these moulds. This accusation is made more detailed in the first

two chapters which deal respectively with Pre-Kantian Empiricism and Pre-Kantian Rationalism. The cognitive relation tends to be confused with the causal relation, and, again, with that of a substance to its states. The result is that all that we know is held to be the states of our own minds. External bodies and other minds are known only by precarious inferences, and Prof. Lossky has no difficulty in showing that such arguments are indefensible on purely empiricist principles even as a ground for probability.

It seems to me unfortunate that Prof. Lossky is apparently wholly unacquainted with the work that has been done in the last ten years or so in England and America. If he had been he would know that there are many writers who quite clearly recognise (*a*) that the cognitive relation is *sui generis*, and that the mere fact that so and so is an object to a mind does not imply that it is a state of that mind, in the sense in which the act of knowing it is a state, and (*b*) regard it as perfectly possible that the only causal relation between the external world and the mind in an act of knowledge is that processes in the former cause the latter to attend at a given moment to a certain part of the former. And yet many of these writers, after drawing these distinctions and recognising this possibility, still find grave difficulties in supposing that the objects of which the mind is directly aware are *in fact* physical parts of the external world or *in fact* existentially independent of the mind which is aware of them. I am not discussing whether these persons are right or wrong, but simply suggesting that, as they *do* recognise the distinctions which Prof. Lossky truly says that most empiricists overlooked, and as they are persons of fair acuteness, it is probable that difficulties about our knowledge of the external world cannot be *wholly* due to the confusions to which our author ascribes them.

The main result of the second chapter is this. Rationalists and empiricists agree in finding no difficulty about our knowledge of our own minds and their states. And the reason is that here our knowledge is supposed to be direct and immediate instead of through representative ideas. Might it not be worth while to try whether the same view would not work equally well for our knowledge of objects other than our minds and their states? This is what Prof. Lossky means by the intuitional theory, and he proceeds to give a sketch of it in the next chapter. I need scarcely tell the readers of MIND, that the general programme is not dangerously revolutionary, whatever we may think of the details. The following is, I hope, a fair sketch of the contents of cap. iii. One part of any act of knowledge is the object known; but there is always another part, and this is the act of comparing this object with and distinguishing it from some other experience. (By *experience* I suppose that *experienced object* is meant, for Prof. Lossky says: 'I contend that the experience . . . compared *is* the object apprehended,' p. 80.) Among experienced objects we must distinguish those which are mine, and those which are merely given to me. The latter include not only sensibilia, such as sounds, coloured patches,

etc., but also organic sensations (*cf.* Prof. Laird's views), and certain desires, *e.g.*, those which are treated under the head of uncontrollable impulses or fixed ideas. But in every experience, whether the object be mine or be merely given to me, there is a factor which is mine, *viz.*, the act of attending to the object given to me. In knowledge of the external world the object is transcendent, in the sense that it is not a state or part of the knowing subject, but is immanent in the sense that it (and not merely some copy, correlate, or other representative of it) is a part of the cognitive state.

As regards this doctrine there are two things to be said. First, it seems doubtful whether the relation of part and whole is a very fortunate analogy to the relation of an object known to the knowing of it. But, although the phrase is an unfortunate one, I think that Prof. Lossky's meaning is clear and sensible enough, and that he is not led astray by the irrelevant implications of his analogy. Secondly, if the doctrine is to be plausible, it will be necessary to enter into a great many subtleties and to draw a great many distinctions which Prof. Lossky does not, in this work at least, mention. It will, *e.g.*, be necessary to distinguish between knowledge of acquaintance and knowledge by description; otherwise we shall end in the morass to which this doctrine, when combined with too simple a faith in the guidance of common linguistic forms, led Meinong and his very able and courageous pupils.

Prof. Lossky holds that the standard arguments for the subjectivity of sensibilia only prove that they depend on and belong to the body, not that they are states or parts of the self. Once this is grasped it is a matter of comparative indifference to epistemology how much we ascribe to the body and how much to external objects. The general principle is that unless the necessary and sufficient conditions for apprehending a certain factor are known to lie in the body that factor must be assumed to belong to an object outside the body. Probably even sounds and colours are not purely intra-corporeal. I must confess that I do not find this theory clear or satisfactory. Prof. Lossky speaks of such objects as *sensations*, but there is no doubt that he is referring to *sensibilia*, and there is no ambiguity in his language so far. But he does speak of the 'content of the sensations' (p. 74) as being a process, and then raises the question: Where is this process going on, in my body or in external bodies? Now, I do not see that sounds and colours are processes at all, though of course the conditions of our becoming aware of them may be processes, and even the conditions of their existence may be processes. Once it is seen (*a*) that a coloured patch is not a process and (*b*) that we must distinguish the questions (i) What process conditions my awareness of this patch? and (ii) Does any process (and, if so, what) condition the existence of the patch? the elegant simplicity of Prof. Lossky's theory vanishes. *E.g.*, I am aware of a red patch and hold that I am seeing a red external object. I am right if there really is an object outside my body and if it really is red, and

it does not matter though the process that makes me aware of the patch be wholly in my own body. On the other hand, if all that is going on is a certain process in colourless atoms, I am wrong, even though this process goes on in the body to which I ascribe the red colour. The really important question about sensible qualities like green is: Is *any* physical object literally green in the sense in which all unsophisticated persons at all times, and all philosophers at most times, assert that grass is green? If external physical objects be not green in *this* sense no reference to my body will save the physical reality of greenness; for there is not the least reason to think that, though grass is not really green, my body or some part of it really is green in the sense in which I wrongly suppose grass to be so whenever I perceive grass. If these external objects such as grass be not really green, Prof. Lossky will be faced with the question: What sort of objects are green? Since he cannot answer that his own body is green, and since it is as certain that *something* is green as that we are aware of green patches, he will be forced to allow the existence of objects which are not physical and are green. (I am not for a moment asserting that in fact colours are not physically real. I think that the arguments to prove this are weak to the last degree. But I do assert that if Prof. Lossky allows *any* weight to such arguments, as he seems inclined to do, the distinction between his own and external bodies will not help him.

Finally it is pointed out that the intuitional theory must not be confined to our knowledge of particulars. We know many objects directly which we cannot know by our senses. This, we shall see later, has an important bearing on induction.

The two remaining chapters of Part I. are devoted to a criticism of Kant and his successors. They contain many excellent but no very novel observations. Kant is blamed, justly it seems to me, for overlooking the objectivity, in the sense of law-abidingness, of inner phenomena. This criticism has been excellently put in England by Mr. Balfour. Similarly he is blamed for failing to see that there is something more in externality to the self than objectivity, in the sense of obedience to law, and for failing to show in the least how our belief in any particular law is ever justified. In fact Kant took over the traditional empiricism and the traditional rationalism, and his main merit is in the highly original structure which he built on these commonplace foundations.

Part II. consists of a much more detailed exposition of the intuitional theory already sketched in Part I. Knowledge consists in comparison of one experienced object with others. (I take it that Prof. Lossky holds that being experienced is not the same as being discriminated, but is a precondition of it. This is the view that Prof. Dawes Hicks takes of his meaning, and is apparently his main point of difference from Lossky.) Judgment is thus the progressive differentiation of an originally vague subject. The

whole, which thus forms the ultimate subject of any judgment, is always before the mind just as it is in nature; the work of judgment is just the recognition of details and of their relations to each other within this whole. The S's and P's of logic are certain groups discriminated within such a whole. So long as you really confine yourself to the given whole you cannot go wrong; you cannot create anything by the act of judgment or find anything that is not there. False judgments arise through the unconscious addition of a subjective factor to the given whole. "Subjective" does not of course simply mean "non-external to the self," for we can and do make true judgments about ourselves and their states.

When thought out this theory does not seem to me to carry us very far. Lossky, *e.g.*, counts an *idée fixe* as non-subjective (p. 86). Suppose then that I erroneously believe that some one is trying to poison me, and suppose that the cause of this belief is that I have a fixed idea of persecution. I add nothing subjective, in Lossky's sense, to the whole which is the real subject of my judgment. Since then I can (*a*) judge truly when the whole content is subjective in his sense, *viz.*, in introspection, and (*b*) can judge falsely when what is added is not subjective in his sense, *viz.*, when I am deceived by a fixed idea, the important factor in false judgment must be the *addition* and not the *subjectivity*, or at best subjectivity must be involved in some sense that he has not clearly defined. Now it is a mere platitude to say that when we judge falsely we add something which is not really present in what we judge about, and it is equally platitudinous to say that this addition is in *some sense* subjective. Of course it is; all mistakes are some one's mistakes and do not belong to the objects judged about. But the really important questions are: What precisely is before our minds when we make a false judgment; how is the whole which is actually before our minds related to that to which we claim to be referring; and, if both be in some sense before our minds, how do we come to assert of one which is in fact only true of the other? I cannot see that the least light is thrown on these questions by our author.

In cap. vii. it is asserted that all true judgments are necessary. Those to which this property is usually confined are simply judgments where the necessity of P can be seen from the explicitly analysed features of S. But the necessity is really present and the same everywhere if the judgment be true. This statement seems to me to be either true but trivial, or important but highly doubtful. Take his example: This rose is withered. Since a complete analysis of the whole characterised as 'this rose' does reveal the attribute of being withered this attribute is necessarily connected with this whole in the perfectly trivial sense that any whole that did not contain the attribute of being withered could not be *this* whole, however much it otherwise resembled it. This, however, is not apparently the sense in which Lossky wishes his statement to be understood, for he goes on to say (p. 265) that 'if

we could trace the structure of all the tissues . . . and all the physical processes in them, the ground of the predicate would come into the light of knowledge'. Now, if it were really true that I could not judge that this rose is withered unless in fact a complete analysis would exhibit grounds in this sense for the predicate, the result would be most important. But I cannot see the least reason to believe it. Surely the sole and sufficient reason for saying that this rose is withered is not the grounds which we do not see but the brown colour and shrunken shape that we do see.

We are further told that in false judgments the predicate is necessitated by the subject + certain subjective conditions, but not by the subject alone. This simply makes confusion worse confounded. If S be not in fact P it is obvious that P cannot be necessitated by S whether alone or combined with subjective conditions. What is necessitated, if we accept the law of causation, is some one's belief in P. But (*a*) in the case of the true judgment it was P itself and not the belief in P which was supposed to be necessitated. And (*b*) since, even in the case of true judgments the belief in P is not the same as P itself, this belief is presumably necessitated, if at all, by conditions some of which are subjective. And I should say that in the true judgment about the rose the conditions that necessitate P (if it be necessitated at all) are not even a part of the conditions that necessitate the belief in P. The whole theory in fact seems to me to be a mass of confusion into which it is hardly worth while to penetrate further.

Judgments, we are told, if true at all, are timeless, and true for all men, even though their subject-matter be an historical event. And again some judgments are genuinely universal in the usual sense. It is the business of ontology to provide such a theory of space and time as shall allow of these facts being possible.

Cap. viii. on the Universal and the Individual seems to me to be very good and the best in the book. It is an attack on nominalism and conceptualism and a defence of realism concerning universals. The negative part is clear and conclusive, but Prof. Lossky does not stop there. He argues that, whilst it is very difficult to grasp the higher universals because they are present in nearly everything, it is equally difficult to grasp the genuinely particular. In ordinary perception what we become aware of is the universal of moderately high order. No doubt what is actually before us is a particular individual, but what we discriminate is only enough to distinguish it from its immediate surroundings and not from all other things. This seems to me to be true and important. Again he says that it is no objection to realism that universals must be in several places at once; this is simply a fact and ontology must give such an account of space as shall be compatible with it.

The ninth chapter discusses the Elementary Methods of Knowledge. Lossky recommends his theory as the only one capable of

giving a plausible account of induction. His criticism of Mill's theory of induction is excellent and conclusive, and his view that Mill's methods presuppose another form of induction is obviously sound. According to him direct induction is the immediate recognition of a connexion between universals, which is given in concrete objects of experience, and of course holds always and everywhere if it holds at all. I should very much like to believe that this is true; and I will go so far as to say that, unless something of the sort be true, induction is logically indefensible. Still there are grave difficulties and I doubt whether Lossky succeeds in meeting them. The sort of difficulty that I feel is this. There certainly are cases that fall under Lossky's scheme. Examples of two things and two things making four things gradually lead me to recognise that the universals 2, 4, and multiplication are so connected that $2 \times 2 = 4$. And this is certainly not a mere probable generalisation, but the recognition of a necessary connexion between universals. My difficulty is that with regard to any natural law we never seem to arrive at this kind of knowledge or anything like it. It is after all a kind of certainty that does not allow of degrees; one either has it altogether or not at all. If Lossky's theory of induction be true one would suppose that some natural laws at least would have acquired the kind of certainty possessed by $2 \times 2 = 4$ or by "whatever is coloured is extended". And this does not seem to be true.

Lossky admits and emphasises the difficulty of being sure that one has got hold of a law in its pure form, and expresses doubts whether even so-called axioms are beyond criticism as at present stated. It remains to be seen whether such a theory of induction could be worked out in detail; it is certainly worth while to try.

Perhaps enough has now been said to show that the book is well worth reading. The critical part seems to me to be always good, the constructive part is interesting as far as it goes, but it seems to me never to go far enough and always to underrate the difficulty of the problems which it so confidently solves. The book would make an excellent text-book for students, if accompanied by lectures which went into further detail and pointed out that philosophical problems are seldom so easy to solve as the author would have us believe.

C. D. Broad.

Totem and Taboo: Resemblances between the Psychic Lives of Savages and Neurotics. By Prof. Sigmund Freud, LL.D. Authorised English translation with Introduction by A. A. Brill, Ph.B., M.D. Kegan Paul. Pp. 256. 10s. 6d. net.

Prof. Freud has turned his astonishingly fertile and ingenious mind to a new problem. Dr. Rivers has pointed out some years ago points of affinity between dreams and the myths of primitive peoples. Now Prof. Freud comes forward with a far more ambi-

tious scheme of application of his peculiar psychological principles. Briefly and baldly stated the aim of the book is to show that all totemism and taboo and, in consequence, "the beginnings of religion, ethics, society, and art meet in the Œdipus complex" (p. 260); that is to say, that all these things are rooted in the male infant's incestuous desire for his mother. This affirmation of the universality of such incestuous desire has become the foundation-stone of all Freudian psychology. Freud writes: "We have gone so far as to declare that the relation to the parents instigated by incestuous longings is the central complex of the neurosis" (p. 29); and "In every individual of the race the desire for it (*i.e.*, incestuous union with the parent of opposite sex) is unconscious, just as in the neurotic" (p. 53). This is not the place to examine this fundamental dogma. We must rather accept it for the purpose of the argument, and try to see how far its acceptance enables Freud to throw new light on the problems of totem and taboo. For if it should appear that he succeeds in this, the fact will lend support to this most disputable doctrine. The conclusions at which Freud arrives may be stated concisely and, I think, fairly, as follows. Totemism is the fundamental form of taboo from which all others are derived. The totem animal is essentially a substitute for the father. The prohibition of intercourse with all women of the totem class is an extension of the prohibition against incest with the mother and is the root of all exogamy. 'The divinity that doth hedge a king,' the taboo of kings and chiefs, is due to the king's occupying the place of the father, to his exercising paternal authority and omnipotence, and the consequent transference to him of the man's normal attitude of jealous hatred towards his father. The taboo of the dead is a further and less direct extension of the same attitude; and all other forms of taboo are extensions of this attitude towards the dead, in so far as spirits or demons analogous to the spirits of the dead are conceived by the savage as surrounding and influencing him at all times and places. Gods were developed from totem animals by a further extension of the same attitude, as the notion of spiritual powers developed. "The totem may have been the first form of the father substitute and the god a later one in which the father regained his human form" (p. 245). Thus the observance of taboo is the beginning of 'conscience,' the rites of the dead the beginning of religion, and the exogamic regulations of the totem clan are the beginning of society. Such in briefest outline are Freud's conclusions. The argument by which he seeks to establish them is twofold. The one part consists in showing the resemblances between the attitude of the savage to his totem and other taboo objects and that of the neurotic, and in a less degree of the normal man, towards his father. The other part consists in showing how, these attitudes being postulated, savage societies may be supposed to have developed their particular forms of taboo and ritual. Let us consider first the former part. The attitude of every man towards his

father is 'ambivalent'. He hates him and desires to murder him, because his father enjoys sexual intercourse with his mother, on whom his own sexual libido is fixed. All this sexual jealousy is normally driven into 'the unconscious' by the social prohibitions and the tenderness for the fatherly protector which naturally arises in response to the father's loving care. In the normal civilised man this repression is successful and continued; but in the neurotic and the savage (for all savages are more or less neurotic or at least in a condition very similar in many respects to neurosis) this repression is less complete, and the incompletely repressed hatred of the father works powerfully within him, alongside his desire for incest with his mother, determining much of his emotional attitudes and actions. This 'ambivalence' of the emotional attitude towards the father is the key which Freud uses to unlock all doors in this obscure region. It is on showing a similar 'ambivalence' of attitude towards the totem, towards kings, towards the dead, and towards taboo objects in general that he chiefly relies for the justification of his scheme. The second part of the argument consists in adopting Robertson Smith's view of the totem feast and the attractive hypothesis of the nature of primeval society which Atkinson and Andrew Lang erected on the basis of a suggestion of Charles Darwin. The combination of these two hypotheses with the principle of the great strength in savages of the 'ambivalent' attitude to the father, based on the incestuous desire of the mother, yields the following sketch of primitive society. The father or patriarch expels from the family circle his adolescent sons, in order that they may not share his rights over the females of the group. When the band of exiled brothers feels itself strong enough, they return, kill the father and eat him; then, being filled with remorse for the treatment of their tenderly loved (consciously) father to which they have been impelled by their unconscious jealousy of him, instead of satisfying their incestuous desires, they set up a strong barrier against any such indulgence, in the form of the exogamic law or taboo against intercourse with the mother; and, since the father was a polygamist, or rather indulged himself indiscriminately with all the females of the group, this taboo against incest affects all the women of the group. The father whom they have slain and eaten then becomes the totem, and the women of his group belong to his totem; and the horror of incest with them remains strong, just because the desire for the mother extends itself to all these wives of the father, for they are collectively the mothers of the revolting brothers, and a mother is by definition a woman with whom they unconsciously desire sexual intercourse. In the totem feast the brothers, *i.e.*, the men of the totem clan, repeat ceremonially the slaying and devouring of the beloved father, thus giving vent once more to their unconscious hatred and, at the same time, renewing their sense of remorse and guilt, which is the foundation of all religion. The taboo of kings and gods at a later stage of social evolution is a natural extension to these wielders of paternal

authority of the ambivalent attitude of tender affection and of guilty remorse. And to the dead in general the same attitude extends, because all death is regarded by savages as due to murder and the sense of guilt of the patricides is so strong and the ambivalence of their emotional life is so habitual, that they feel themselves to be the murderers of all of their relatives who die; and the more they love them the more strongly do they unconsciously hate them, and therefore the more distinctly do they feel the sense of guilt and the fear of their shades. It is advisable to substantiate this condensed account by citing a few of the most relevant passages. "Psychoanalysis has revealed to us that the totem animal is really a substitute for the father, and this really explains the contradiction that it is usually forbidden to kill the totem animal, that the killing of it results in a holiday and that the animal is killed and yet mourned" (p. 234): "the expelled brothers joined forces, slew and ate the father, and thus put an end to the father horde. . . . Of course these cannibalistic savages ate their victim. This violent primal father had surely been the envied and feared model for each of the brothers. Now they accomplished their identification with him by devouring him and each acquired a part of his strength. The totem feast, which is perhaps mankind's first celebration, would be the repetition and commemoration of this memorable, criminal act with which so many things began, social organisation, moral restrictions and religion" (p. 236). "They hated the father who stood so powerfully in the way of their sexual demands and their desire for power, but they also loved and admired him. After they had satisfied their hate by his removal and had carried out their wish for identification with him, the suppressed tender impulses had to assert themselves. This took place in the form of remorse" (p. 237). This remorse forbade the killing of the totem, except ceremonially. "They undid their deed by declaring that the killing of the father substitute, the totem, was not allowed, and renounced the fruits of their deed by denying themselves the liberated women. Thus they created the two fundamental taboos of totemism out of the sense of guilt of the son, and for this very reason these had to correspond with the two repressed wishes of the Œdipus complex" (p. 238). "At first the brother clan has taken the place of the father horde and was guaranteed by the blood bond. Society is now based on complicity in the common crime, religion on the sense of guilt and the consequent remorse, while morality is based partly on the necessities of society and partly on the expiation which this sense of guilt demands."

This comprehensive scheme of explanation of all things in terms of 'the Œdipus Complex' might be criticised by questioning the truth of its three basal hypotheses, namely, the universality of the Œdipus complex, Robertson Smith's view of the totem feast, and the Lang-Atkinson view of the nature of the primitive human group and the 'primal law'. It might also be criticised by pointing to

things that it does not explain, such as totems which are not animals, but such things as the sun, stars, rain, wind, and taboos such as those connected with agricultural operations or whatever other things and actions are of great importance to the savage. But Prof. Freud's ingenuity would no doubt be equal to the task of extending his system of explanation to such things, also, to tracing all of them back to the Œdipus complex. It is more profitable therefore to waive such objections, to grant to Freud his three basal hypothesis, and to inquire whether, these being given, the scheme as applied entails any insuperable difficulties. One serious difficulty is lightly touched on by Freud himself. "We know nothing about the origin of this ambivalence (the coincidence of love and hate towards the same object). It may be assumed to be a fundamental phenomenon of our emotional life. But the other possibility seems to me also worthy of consideration: that ambivalence, originally foreign to our emotional life, was acquired by mankind from the father complex, where psychoanalytic investigation of the individual to-day still reveals the strongest expression of it" (p. 261). "It can hardly have escaped any one that we base everything upon the assumption of a psyche of the mass in which psychic processes occur as in the psychic life of the individual. Moreover, we let the sense of guilt for a deed survive for thousands of years, remaining effective in generations which could not have known anything of this deed. We allow an emotional process such as might have arisen among generations of sons that had been ill-treated by their fathers, to continue to new generations which had escaped such treatment by the very removal of the father." That is to say Freud here raises the question which is raised also in an acute form, but not, so far as I know, previously mentioned by him, by his doctrine of fixed universal symbols; the question namely of the validity of postulating well formed racial innate ideas and racial sentiments or complexes. Jung has boldly recognised this problem and accepted such innate ideas, in his doctrine of universal 'archetypes' of thought; and it is interesting to see that Freud is becoming alive to the same implication of his doctrines. In the present state of biological opinion the necessity of assuming such innate factors of the mind is an objection to the whole Freudian system; but not a fatal one, for the possibility of the transmission of acquisitions by use-inheritance cannot be absolutely ruled out. But, if we grant such implanting in the racial mind of such ideas and tendencies by use-inheritance, we cannot allow Freud to play fast and loose with the principle, as he inclines to do. For he tells us that Westermarck is wrong in supposing the horror of incest to be innate—"the experiences of psychoanalysis make the assumption of such an innate aversion to incestuous relations altogether impossible. They have taught, on the contrary, that the first sexual impulses of the young are regularly of an incestuous nature" (p. 206). It would indeed be difficult to admit that each of us inherits both a tendency to

incestuous love and a horror of it; and to admit this would be gravely disturbing to the whole Freudian system. We have then this curious situation. Freud asks us to admit that the remorse and sense of guilt experienced by the rebel sons of the primeval horde who slew and ate their father became innate in all their descendants and has been the basis of all subsequent religion; while the horror of incest, which is assumed to have been evoked in each generation during and since those remote ages, has not become in any degree innate. Another serious difficulty arises in connexion with those forms of taboo known as 'avoidance customs,' avoidance of females of the same totem, the mother-in-law, and so on. Freud assumes that the avoidance custom is evidence of unconscious incestuous desire, for only if the desire and also horror of it as incestuous be present will the avoidance taboo be maintained. "If taboo expresses itself in prohibition it may well be considered self-evident . . . that it is based on a positive desireful impulse. For what nobody desires to do does not have to be forbidden" (p. 117). We have then to suppose that the incestuous desire for the mother is extended to all women who are the objects of 'avoidance'. It would seem that this incestuous desire in a so highly inflammable passion that the mere acquisition by any woman of a position in any way resembling that of the mother, *e.g.*, that of mother-in-law, or that of membership in the mother's totem group, suffices to direct it upon such a woman and thereby to necessitate the imposition of the taboo. In these few critical remarks I have been willing to give Freud all the rope he asks for, and even more; but there are limits to our credulity beyond which even the glamour and prestige of the Freudian psychology cannot and should not carry us; and in this matter, I think, those limits have been passed. I cannot conclude without citing one delicious example of the working of the Freudian imagination. "With the introduction of agriculture the importance of the son in the patriarchal family increased. He was emboldened to give new expression to his incestuous libido which found symbolic satisfaction in labouring over mother earth" (p. 253). So that agriculture also can be traced back to the Œdipus complex. It is true that many anthropologists have shown reason to think that women were the first cultivators of the soil. But no doubt they were accustomed to speak of 'father earth,' and by so doing were enabled to secure the much-needed symbolic satisfaction of their incestuous libido. Is it possible that when men speak of mother earth, they are really disguising the fact that unconsciously they regard the earth as their father and that, when they thrust their implements into it, they are repeating the primordial tragedy of the slaying of the much loved and hated father? This suggestion may be recommended by the fact that its acceptance would at once explain the practice of earth-eating or geophagy which at one time may have been universal. It would also explain the universal tendency of boys to cover themselves with mud; for if the earth is the father, it is obvious that mud is the blood of the father, and by

thus imbruing their hands with the blood of the father they would find satisfaction for their unconscious hatred of him.

In short, is it not obvious that if we allowed ourselves the laxity of reasoning which is habitual to Freud and many of his disciples, and if we possessed his fertile ingenuity, there would be literally no limits to the possibilities of application of his principles, and that every detail of the conduct of men in all the seven ages might be traced back to the same foul root, 'the Œdipus Complex'?

W. McDougall.

L'Energie Spirituelle, Essais et Conferences. By Henri Bergson. 2nd edition. Paris: Felix Alcan, 1919. Pp. 227.

It was assuredly a felicitous idea of Prof. Bergson to republish these essays: for not only do they gain by being brought together, but they serve to illuminate and test the philosophy which inspires them, and help to impress upon the world the important novelties it contains. In philosophy new ideas are of such rare occurrence and the mass of philosophers are so content to ruminate (in inferior form) the traditional dogmas they have derived from Parmenides and Plato, that when anything really new is said, it has to be repeated again and again until it begins to sound familiar to minds that would otherwise be incapable of assimilating it. In this case it is fortunate, both for the author and the reader, that Prof. Bergson commands such singular felicity of style and fertility of illustration that his points always seem new even where he is really enforcing his old ones.

The present volume, he says in the preface, contains papers dealing with definite problems of psychology and philosophy which all centre round that of spiritual energy, and is named accordingly; he promises a second volume to include papers dealing with the method of his philosophy, its origin and mode of application. This second volume will be no less welcome than the first and will doubtless go far towards setting at rest the difficulties which have been raised about the meaning of 'intuition'. Meanwhile the book is actually composed of (1) the Huxley Lecture on *Consciousness and Life* given at Birmingham in 1911; (2) an essay on *Soul and Body* republished from *Le Matérialisme actuel* (edited by Dr. Gustave Le Bon); (3) the brilliant Presidential Address delivered to the Society for Psychical Research in 1913; (4) a lecture on *Dreaming* delivered at the Institut Général Psychologique in 1901; (5) an article on Paramnesia from the *Revue Philosophique* of December, 1908; (6) another, on *Intellectual Effort*, which appeared there in January, 1902; and (7) a paper submitted to the Geneva Congress of Philosophy in 1904, of which the title has been changed (to advantage) from *Le Paralogisme psycho-physiologique* to *Le Cerveau et la Pensée, une illusion philo-*

sophique. I shall endeavour in each case to note the most significant points of the argument.

The Huxley Lecture enforces with great wealth of illustration the conception that the mind is essentially "a bridge thrown from the past to the future," and its 'memory' accumulates the past in the present. The brain functions as an instrument of *choice*, which determines what motor reaction is to be the suitable response to a sense-impression. To do this it has to 'remember,' *i.e.*, to utilise the past so as to forecast the future. But there is no need of consciousness where automatic routine responses suffice. Hence plants, having become 'earth-parasites,' have renounced their right to motion and consciousness. Nevertheless nothing that lives is wholly devoid of these, and with them of the power to act and to create the new, by 'inserting' itself into brute matter and 'detonating' its stored-up energies. Thus life is essentially 'freedom,' and it is difficult to view its evolution without feeling that it is animated by a *poussée* which for ever urges it, unpredictably, to new creations (p. 20). This *élan vital* is only a hypothesis, a mere possibility as yet—but we may come to understand it presently.

The second essay emphasises again that the function of consciousness is to import novelty into the world (p. 33). M. Bergson points out that metaphysical philosophy has been unwilling or unable to devise a theory of the relations of mind and body (p. 40). Consequently the scientist was entitled to assume a complete correspondence between the psychical and the physical and to proceed as if thought were only a function of the brain. Indeed Cartesianism, conceived as it was as an encouragement to the science of mechanics, could mean nothing else in its scientific application: still materialism is not science, but sheer metaphysics. Actually the brain is an instrument for effecting choices, not the choice itself; thought therefore is largely independent of the brain (pp. 46-47). Psychology scarcely studies real living thought; what is called thought is only an artificial imitation formed by compounding images and ideas (p. 47). But ideas arise only when thought is arrested by some obstacle; and the real thought is an individual movement, the *sense*, which passes through the words it uses. The brain, being material, serves to adapt thought to the material world, and may be called *the organ of attention to life* (p. 51). This is why quite a slight injury to it can upset the mind's functioning. To compare his theory with materialism, Prof. Bergson takes the test case most favourable to the latter, that of memory; he shows that even here retention cannot be mechanical, and that even aphasias are failures of adjustment to the situation. The use of verbs is the last to be lost, because they are the words for actions. Every word in a phrase carries in its context the whole past of whoever pronounces it. The whole past therefore is subconsciously there; only it is screened off by the bodily mechanism. Thanks to that we can attend to the

future; it does not preserve, but conceals, the past, allowing only so much of it to come through as is practically usable. Whence it follows that the soul extends beyond the body and its survival becomes conceivable.

With this corollary to his psycho-physical theory Prof. Bergson definitely ranges himself among the advocates of what James has called the 'transmission' theory of the relation of body and soul, and appreciably enhances the probability that psychologists and philosophers will presently have to take it seriously into account. As one of the first to have perceived its logical merits, I can only welcome M. Bergson's support. The conclusion of this essay also explains how in the next we find him delivering a Presidential Address to the Society for Psychical Research. Here we find once more the idea of a body which serves to concentrate a vaster spiritual life upon immediate practical needs, with the corollary that the soul may well survive the body. The address concludes with a highly suggestive speculation as to what would have happened if our science, instead of developing out of the problems of physics and solving them by dint of mechanics, had started from those of psychology and had evolved a vitalistic biology and psycho-therapeutic medicine, but had failed in applying these notions to physics; no doubt the triumphs of mechanistic science would then have appeared miraculous.

In the fourth essay M. Bergson endeavours to be more 'orthodox'. Up to a point his account of dreams spares scientific susceptibilities. Dreams are not fabricated out of nothing, but out of sensory stimulations which the sleeping organism continues to receive; they yield no new experience and are not truly creative. Dreams of flying and of problem-solving are explained away. Theoretically a dream is a fusion between a memory and sensation (p. 103), and its mechanism does not differ in principle from that of perception (p. 106). It differs only in that it represents the total mentality *minus* the special effort which narrows it down to the real world, and so fails to render its memories relevant and to fit them on the sensory stimuli correctly. The apparent rapidity of dreams is explained similarly; memories can 'race' when the real no longer acts as a fly-wheel to regulate their pace. But finally there comes a reference to psychical research and a hint that after all there may be something more in dreams: those discussed were the shallow dreams of light sleep, but those of deep sleep, could we study them, might reveal supernormal powers and a completer memory of our past. I should cordially agree, but contend that ordinary dreaming really implies as much. For surely flying in dreams, until aviation was invented and for those who have not practised it, *was* a novelty that had no parallel in experience. Moreover, creative thought in dreams is by no means as rare as Prof. Bergson supposes: in addition to R. L. Stevenson's case which he mentions, Coleridge's *Kubla Khan*, the discovery of 'Verner's Law,' and Jastrow's Babylonian cylinder are well

authenticated. But what is most surprising in Bergson is that he of all people should have passed over the problem of *selection* in dreams. For dreams are quite as clearly selective as waking perception and the association of memories with sensory images is as little mechanical as in waking life. Many dreams (possibly all, if we allow for the fragmentariness of our memories) *have a plot*, the point of which is usually directed against the dreamer. He at any rate neither foresees it nor constructs it. Now this implies 'dissociation,' not merely between the dreamer and the waking self (as is attested by the amount of amnesia for dreams), but also between the dreamer and the 'maker of dreams'. M. Bergson seems to catch a glimpse of this when he remarks (p. 100) that in problem-solving "the part of the mind which works is not the same as that which is dreaming": the latter is always passive and usually the victim of the plotter of the dream. Hence dreams are even better evidence than M. Bergson claims for a mind that extends beyond the exigencies of practical life.

The fifth essay is a masterly and fully-documented study of 'false recollection' or paramnesia, which turns out to be 'memory of the present'. When, owing to some diminution of the mind's normal tension, there is a slight momentary lapse in the attention to life, the memory, which should be formed simultaneously with the perception, fails to coalesce with the image; so it appears by its side with its inherent pastness; the present perception thereupon appears to be 'remembered' and the real seems dream-like.

The sixth essay, perhaps the most difficult in the book, may be said to be concerned with the problem of the purposive direction of a train of thought and the utilisation of the mental images which occur in it. Prof. Bergson sees what most psychologists have failed to grasp, that their *relevance* has to be accounted for, that there is a plan of action involved, and that *the meaning* of the images somehow determines their occurrence. Mental effort is felt when the '*schéma*' or plan has difficulty in selecting suitable 'images'. To clear the matter up completely it would probably be necessary to make a further study of the notions of 'relevance' and 'meaning'; but Prof. Bergson is clear that the reduction of the mind's contents to images is a hypothesis and an attempt to treat them on the model of external objects (p. 200).

The last essay is a very closely reasoned criticism of psychophysical parallelism, when conceived, not as a methodological principle, but as a piece of dogmatic metaphysics. As such it passes, surreptitiously and fallaciously, from one system of notation to another. Philosophy has the power to treat everything either (realistically) as a *thing*, or (idealistically) as a *representation* (idea). If either notation is used consistently, the parallelistic equation of psychic state with cerebral ends in a contradiction. To maintain it *both* must be used, and the contradiction evaded by an oscillation between them. Thus with the idealist notation parallelism must mean that the perceived objects are superfluous.

For the cerebral state is enough to cause perceptions. Yet as for idealism external objects and the brain are both 'ideas,' this means that the brain-idea can represent the external-world-idea. But as the brain is a part of the external world, parallelism implies that the part is the whole. The contradiction escapes notice because there is an unconscious transition to realism: the brain and its movements are unconsciously turned into real things.

Realism postulates (1) external objects which modify (2) a brain, so as to excite (3) ideas in it. Consequently the brain alone cannot create the ideas of objects. Here again parallelism credits an artificially selected part of the real with the performance of the whole. Practically there is continual oscillation between the idealistic and the realistic conception of ideas. They are first treated as *things* and as capable of containing what they do not actually exhibit. But this is to identify the brain as it appears to us with the underlying reality, and this is idealism. Yet to affirm an underlying reality is realism once more, while to apply to the real the laws of ideas is a reversion to idealism. There is thus continual equivocation between the brain as an idea and as the underlying reality, and whichever way it is taken it cannot be equated with all that is.

This argument is so subtle that it would gain by expansion and illustration from the actual oscillations of parallelists. But it is well worth pondering, as indeed is the whole book, of which, one is gratified to learn, a translation, by so competent a hand as Prof. Wildon Carr's, is shortly to appear.

F. C. S. Schiller.

VI.—NEW BOOKS.

The Idea of Immortality, its Development and Value: By George Galloway, D.Phil., D.D., Principal and Primarius Professor of Divinity, St. Mary's College, University of St. Andrews. The Baird Lectures, 1917. Edinburgh: T. & T. Clark, 38 George Street, 1919.

This is an altogether admirable course of Lectures. It is essentially moderate and reasonable in tone. Perfectly clear and definite in his own conviction both as to the truth and as to the importance of the belief in personal Immortality, the author certainly cannot be accused of exaggerating either the essentiality of the belief or the strength of the argument for it.

The first chapter contains a very moderate estimate of the importance of the question. The second chapter gives an interesting account of early beliefs on the subject. The third deals with "Science and the Problem of Immortality". Principal Galloway aims at rebutting materialistic and other arguments against the possibility of Immortality, and arrives at the conclusion that nothing that is known as the nature of the soul and its relation to the body is inconsistent with the belief in its survival after death. The results of psychcial research are briefly dealt with; the writer holds that survival has not been proved. He seems disposed to accept the view that "ostensible cases of telepathy from the dead can generally be explained by telepathy from the living" (p. 94). Then there is a chapter on "Philosophy and the Problem". It contains an admirable survey of the development of philosophical opinion on the subject. While Dr. Galloway holds that no purely metaphysical or psychological argument can by itself prove, or even establish the probability of, the belief, he shows how profoundly the attitude of the philosopher towards it is affected by his general theory of the Universe, especially his view as to the relation between God or the Absolute and the individual mind. Much good criticism upon the systems which do not favour the belief, and on some of those which do so, is condensed into a very short space. The writer insists that "a monistic idealism in which God, or the concrete universal who unifies all differentiations, is an all-inclusive unity, has hardly room for the persistence of the personal spirit after death. For it gives no adequate recognition to human personality at the outset" (p. 119). He has some good reflexions on the various attempts to show that values are conserved in a Universe in which all souls are extinguished at death. "In what way," he asks, "can value be conserved if the personal lives which make value real are not conserved? Surely it is an 'inconceivable abstraction' to speak of impersonal values! Eliminate the personal reference, and values must cease" (p. 124). On the other hand, a Philosophy which recognises the reality and importance of the individual makes personal survival a perfectly admissible hypothesis. Principal Galloway's own particular way of giving the individual soul its due importance and place in the Universe, and of explaining its relation to the individual body, is by a kind of Monadology—based on Leibnitz and Lotze but not identical with either system—which, to me

personally, does not seem very convincing. His views on this matter have been more fully developed in his other works, and it would be out of place to explain or criticise them here. There is a rather difficult speculation as to a possible pre-existence of "the essential self" (*i.e.*, the dominant monad) without a pre-existence of the "concrete human personality which is a centre of specific relations and memories". This view no doubt appears to concede to the soul a certain independence of the bodily organism which might be held to favour the idea of its survival after death. And yet Dr. Galloway is so much impressed with the difficulty of supposing that "the organism and the environment, closely linked together as they are, could pass utterly away, and the personality which had developed in them and through them remain in the fullest sense one personality" (p. 139), that he feels driven to "the idea of a developed self, no longer thwarted and impeded by a body, but fashioning for itself an organism [a new organism] to be the more perfect instrument of the spirit" (p. 140). The pages in which this view is developed form the most original part of the book; but it is not necessary to accept the views here propounded to agree with the general conclusion that a Metaphysic which duly recognises the importance of the individual spirit and its relative independence in relation both to matter and to the Universal Mind leaves the hypothesis of personal Immortality a quite possible, if a difficult conception, while it is only when we take into consideration the deliverances of the moral consciousness that we can reach any positive argument in its favour.

In chapter v., Dr. Galloway develops "the ethical argument for Immortality". The belief in Immortality is "a postulate put forward to harmonise the facts of experience, and to make them consistent with the demands of the moral consciousness" (p. 157), which are of course themselves facts of experience. This is not "an argument from human wishes and desires": it is based "on the demand of the practical reason for coherence and harmony in a moral universe". Dr. Galloway goes on to argue that it is demanded also by "the principle of immanent justice". In view of Prof. Laird's recent attempt to show that the moral argument for Immortality disappears when the retributive theory of punishment is abandoned, it may be well to add that Dr. Galloway definitely disclaims this view. But, he contends, "any complete view of human good implies a union of virtue and happiness" (p. 159). And such a union could never be adequately realised in such a world as ours without personal immortality. Dr. Galloway then goes on to show that the argument for the necessity of Immortality to rationalise the Universe is practically the same as that other form of the ethical argument which "takes its departure from the acknowledged incompleteness of man's moral life". If man "is condemned to pursue ideals which the scope of his earthly life precludes him from attaining, it is only reasonable to expect that room will somehow be given for their attainment" (p. 167). "The notions of justice and completeness come together in the conception of a teleological development of the personal life to its consummation in the transcendent world" (p. 169).

The concluding chapter deals with "Immortality and the religious view of the world". Prof. Pringle-Pattison has recently complained of the exaggerated expressions of certain writers of the last century (*e.g.*, Tennyson) as to the worthlessness of life without the hope of Immortality. He could hardly make the same complaint of Dr. Galloway's plea for the essentiality of this belief to the religious view of the world. It would be impossible to desire a more temperate and balanced statement than is contained in this chapter. After showing the unsatisfactoriness of mystical and pantheistic conceptions of Eschatology and tracing the

gradual evolution of the idea of personal Immortality in late Judaism and Christianity, he concludes that "there cannot be an abiding dualism in the heart of things: the end of development cannot be a Kingdom of darkness which remains to the last in eternal contrast and antagonism to the Kingdom of light. For if spiritual development ended in such a contradiction, it would seem that it closed in failure and defeat. The inevitable conclusion would be that the Divine plan had been frustrated, and the Divine purpose had failed to reach its complete fulfilment" (p. 225).

I am disqualified from much criticism of Dr. Galloway's book by my complete agreement with its general line of thought. Within the limits prescribed by the size of the book and the attempt to deal with the subject by itself and apart from a general system of Metaphysic, one could hardly desire a better, clearer, or soberer statement of the case. Perhaps, personally, I might have liked now and then a little harder hitting both in the defensive and the offensive parts of the argument: but many will probably find Dr. Galloway's extremely moderate and judicial handling of the subject more convincing than a more impassioned argument. Though very intelligible and untechnical, and not intended exclusively for professed students of philosophy, the argument is conducted on a high philosophical level: there is no rhetoric, no appeal to mere sentiment, and no evasion of difficulties.

H. Rashdall.

A Fragment on the Human Mind. By John Theodore Merz. London: Blackwood & Sons, 1919. Pp. xiv, 309.

These pages will have a great interest for all lovers of careful thinking as a postscript to Dr. Merz's great work on the *History of European Thought*. As we are told in the *Preface*, they are to be taken as a corrective to the impression, which the last two volumes of that monumental study has produced in many quarters, that Dr. Merz is too much in sympathy with German idealism and a-priorism to do full justice to the "plain historical method" so characteristic of British philosophy. Certainly the balance is very generously redressed in the present *Fragment*; the only question it suggests is whether, in the generosity of his heart, Dr. Merz has not allowed the pendulum to swing rather too far. What he undertakes to do, to put it briefly, is to accept the results of Hume's negative criticism completely, and then to show how by substituting the "presentation-continuum" of Dr. Ward for Hume's scheme of a sequence of "ideas" which are all "individual" existences, and putting ourselves at the point of view of a genetic psychology, we can build up on a basis of Humian phenomenalism a constructive idealism which might perhaps be described as Hegelianism interpreted by the aid of Lotze. I own to a certain obstinate doubt whether the thing can be done at all. I have, in fact, two great difficulties in accepting the first principles of Dr. Merz's construction. I am not satisfied that the whole procedure is not an attempt to make a genetic psychology do the work of a critical theory of knowledge, and does not thus involve the confusion of an inquiry into facts with an examination of values. I think I detect evidence of this confusion of two different questions in what appears to be the thoroughgoing identification of the standpoint of genetic psychology as such with the *vue d'ensemble* or "synoptic view" of problems to which the *History of European Thought* itself is so notable a contribution. The *vue d'ensemble* of course requires that psychological analysis shall be integrated with genetic psychology, but surely it requires a great deal more as well. And again in reading Dr. Merz I am haunted by the suspicion that he

never fairly succeeds in expelling from his construction the subjectivism he has introduced out of Hume into its foundations. He seems to me,—perhaps, in spite of repeated reading, I have not quite caught his meaning,—to concede to Hume the fundamental false thesis from which Hume's scepticism springs. I mean that he starts with a "presentation-continuum," or to use the metaphor he prefers, a "firmament of thought," which is taken to consist simply of psychical states. "Ideas" are treated, exactly as Hume treated them, as so many events; it is forgotten that they have from the first a cognitive value as revealing objects. When one begins with this assumption, I do not see that the correction of psychological atomism by the concept of a "firmament of thought" really mends matters much, so far as one's philosophy goes, though it may be an improvement in one's psychology. One may succeed, no doubt, in showing how interconnexion is established between different regions in the "firmament," how some complexes come to symbolise them, and may arrive thus at a great deal of sound historical knowledge about the way in which the organisation of thought develops. But,—how does this thought ever become that something more than thought which we assume it to be when we call it *knowledge*? If the crude beginnings themselves are not from the first knowledge, how is knowledge made out of "mental processes" as they get increasing systematic structure? There is the problem to be solved by a writer who sets himself to get philosophy out of a positivistic psychology, and I do not feel that Dr. Merz really solves it, nor indeed that he is fully alive to its inherent desperateness. I honestly think that in his generous desire to show how cordially he appreciates the performance of Hume, he conceals from himself the impossibility of the task he has set himself. The point is, of course, that Hume begins by excluding the cognitive value of the "impression" from his purview. The "impression" is treated simply as an "event," as something that happens; it is forgotten that it is also something which has a meaning. If you begin by thus eliminating the aspect of value from the "impression," I do not see how any amount of psychological subtlety is to correct this initial error. You will at best build up a genetic theory of the processes by which the "stream of thought" takes shape. By introducing the presentation-continuum you may make this theory something much richer than anything Hume could construct on the lines of a crude Associationism, but the "stream of thought" or "firmament of thought" still remains only a stream or firmament of *thought*, a very elaborate and interesting complex, but a complex of mere "occurrences". *Knowledge*, if it is to be found in the result of your construction, must have been there all along from the very first. This is, of course, the real and unanswerable point for which T. H. Green is contending against the "naturalists," and the soundness of the contention is in no way affected by the objections which may be taken to Green's own attempt to replace the naturalist misconceptions by a curious amalgam of the *Critique of Pure Reason* with an Averroist Aristotelianism. Or, to put my point in another way, when Dr. Merz corrects Hume in the light of Ward, I am not sure whether he is quite clear on the all-important point that the continuum which figures in Dr. Ward's psychology as the "presentation-continuum" is all along a presented *object*, not an occurrence. That it is spoken of in language which might be taken to refer to a mere occurrence, as a continuum of presentations rather than a continuously present object, is, I take it, a mere consequence of the fact that Dr. Ward's immediate concern in his account of it is with psychology and not with philosophy. I venture to think that Dr. Merz's *Fragment* would have gained in value if he had not allowed himself to treat Hume quite so much as the logically necessary final outcome of the line of thought initiated by Locke. It is, after all,

only one side of Locke which is worked out in Hume. If we keep it in mind that Locke's real object was critical philosophy, not psychology, and observe how prominent the question of the value of our cognitive processes as knowledge is made throughout the *Essay*, we may feel a great deal of doubt about the legitimacy of Hume's claim to be regarded as the *philosophical* heir of his great precursor. I think that the popular version of the history of British philosophical thought distorts the real connexions both in supposing Berkely to be much more concerned with Locke than he really is, and in exaggerating the influence of Berkeley on Hume.

I have devoted this notice to indicating the reasons why it seems to me that Dr. Merz has set himself an insoluble problem. It need hardly be said that any sketch of the growth of a mind coming from Dr. Merz is bound to present many striking and happy reflexions, and will be read with profit and pleasure by all who know the value of his great work on European Thought. I should like in particular to call attention to the admirable reflexions about religion and the claims of the Christian religion in particular with which the *Fragment* concludes. Dr. Merz is abundantly qualified, if any man could be, to speak as "one having authority" about the bearings of philosophy on religious belief, and it is most instructive to see how completely free he shows himself of the tendency, so often ludicrously illustrated by the behaviour of men without a tithe of his vast knowledge, to attempt to prescribe this or that restriction to living faith in the name of "philosophy".

A. E. Taylor.

Pleasure-Unpleasure: an Experimental Investigation of the Feeling-elements. By A. Wohlgemuth. British Journal of Psychology Monograph Supplements, no. 6. Pp. 252.

This work is a detailed account of an experimental investigation of Feeling by the 'method of impression,' with complete introspective protocols and full analysis of these protocols. The experimental notes and records are prefaced by a short introductory discussion, devoted in the main to questions of terminology and classification, and succeeded by an equally concise statement, in a series of propositions, of the conclusions which the author draws from his experimental results. The whole represents one of the most valuable contributions to the psychology of Feeling that can up to the present be placed to the credit of the psychological laboratory. Not many years ago Titchener was deploring the unsatisfactory state of the psychology of Feeling, and in particular the lack of definite experimental evidence on some disputed points. It almost seems as if Dr. Wohlgemuth had been stimulated by Titchener's complaints to undertake the present investigation, so aptly does it fit in with the general tenor of Titchener's remarks.

It cannot be expected that in a subject like the psychology of Feeling the results of a single investigation will still all controversy. Indeed we doubt whether, on any one of the main questions at issue between the leading controversialists, Dr. Wohlgemuth's results will be accepted as final and conclusive. All the same it is much to have brought the questions to a clear experimental issue, and to have placed on record definite experimental evidence for or against views, which had previously little substantial basis beyond theory and general impressions.

A survey of the work suggests two main criticisms, the first as to the scope of the enquiry as it apparently presents itself to Dr. Wohlgemuth, the second as to the range of problems actually studied, as it appears to

the interested onlooker. Dr. Wohlgemuth, rather dogmatically perhaps, assumes that his investigation is concerned with the *affective elements*. He does not like that term and would prefer to speak of 'Pleasure-Unpleasure'. We may let it go at that, though without agreeing. The 'Pleasure-Unpleasure' he has in view, and the 'Pleasure-Unpleasure' the investigation is calculated to emphasise, is that involved in the sense-feelings. The other forms of 'Pleasure-Unpleasure' that make their appearance in the course of the investigation are by-products. Now it is assuming a good deal to assume that the affective elements—the term cannot be avoided—are truly and adequately represented in the 'pleasure-unpleasure' of the sense-feelings. It is not clear that the 'satisfyingness' or the reverse of a course of action is not equally elementary. With respect to the range of problems studied, we cannot altogether resist the feeling that more has been attempted than was quite desirable in the interests of the adequacy and validity of the results. A general survey of the whole field is characteristic of preliminary work in the experimental study of a complex congeries of problems. That is followed by detailed and systematic work on individual problems, applying every possible method of control, and using every possible precaution. The question may be raised whether the experimental psychology of Feeling has or has not arrived at the second stage. A preliminary general survey, in any ordinary sense, of the whole experimental field Dr. Wohlgemuth's investigation is certainly not, but we must confess to a faint suspicion that had he concentrated his attention on a single problem, or a few problems, availing himself perhaps of the 'method of expression' as a control, he would have provided us with results more calculated to inspire confidence and retain permanent validity.

The most interesting conclusions at which Dr. Wohlgemuth arrives are:—

1. That "there are only two qualities of feeling-elements".
2. That "two or more feeling-elements"—like or unlike—"may co-exist in consciousness".
3. That "feeling-elements can often be localised".
4. That "there is nothing on the affective side of consciousness to correspond with the memory image on the cognitive side".
5. That "if a feeling-element is attended to as belonging to a cognitive context . . . it is intensified and becomes clearer".
6. That "the feeling-element of any state of expectancy appears to depend upon the feeling-element of the expected experience".

Without having before us the experimental evidence upon which these conclusions are founded it is futile, not to say unfair, to attempt any criticism of them here, but they at least serve to illustrate the extent to which Dr. Wohlgemuth's results cut across current controversies in the field of affective experience, and to prove the very great psychological importance of his work. When all is said and done, that the work is of the greatest interest and significance must remain our final verdict.

JAMES DREVER.

General Psychology. By WALTER S. HUNTER. Chicago: University of Chicago Press. Pp. xiii + 351.

This work is intended as a textbook for an introductory course in psychology. The author—Prof. Hunter, University of Kansas—has followed the method and order of treatment, which he has found most successful in his own teaching of the subject. The result is a book presenting several novel and interesting features. Probably every teacher

of psychology has experienced the difficulty of orienting himself to the beginner's point of view without sacrificing the scientific and logical presentation of the subject more than is absolutely necessary. To some extent perhaps this difficulty is felt with all sciences, but it is felt more especially with psychology on account of the fact that some of the most abstruse and intricate problems of the science must be encountered by the student at the very start. Hence a new method of attack, whether it ultimately commends itself to his judgment or not, will always have considerable interest for the teacher of psychology.

Prof. Hunter's presentation of psychology is divided into two parts. Part I. is entitled 'Fields of Psychology,' and discusses in four chapters —96 pages—Animal Psychology, Individual and Applied Psychology, Abnormal Psychology, Social and Racial Psychology. Part II. is entitled 'Normal Human Adult Psychology,' and presents the ordinary topics discussed in an introductury textbook in the following order: Attention, the Nervous System, Reflex Action and Instinct, the Emotions, the Affective Processes, Sensory Processes, Imagination, Memory, Thinking—an order of treatment that has much to commend it. Of course it is open to any teacher to begin with Part II., and take Part I. later, and we fail to see that any other way of using the book is possible, if the course is intended as a serious and systematic course in psychology rather than a course of popular lectures on psychology. To begin with the concrete is sound pedagogy. To begin with the near, the familiar, and the simple is another equally sound pedagogical principle. In trying to follow the first, Prof. Hunter can hardly have had the second in his consciousness at all. Animal Psychology, followed by Individual Psychology—the Binet-Simon Tests and the like—and Applied Psychology in Medicine and Industry, and that followed by Abnormal Psychology, and Social Psychology, all without any preliminary treatment of Psychology as such—this might produce the student with a good deal of superficial information about psychology, but is hardly calculated to produce the psychologist. Indeed it is all just a little suggestive of Alice's grin without the cat.

There is nothing to be gained from a detailed criticism of Part I. Covering the ground it professes to cover in 96 pages is obviously quite hopeless. The result of the attempt is a series of episodes, some of them recounted in a very interesting way, interspersed with such remarks as "it must be conceded we have omitted many important topics," or "although the topic is of absorbing interest, it must be passed by without further comment". Part II. is much better, though it suffers from being squeezed by Part I. Several of the chapters are excellent as résumés of the results of recent experimental work, and contain many things not usually found in the introductory psychology textbook. Especially is this the case with respect to the chapters on the emotions, the affective processes, and thinking, but even in these chapters a little more care might have been taken to make the descriptions of the experimental work cited clear and accurate. Some notable omissions there are, the most important being the psychology of language. The point of view is predominantly behaviourist. It is true the author professes in the preface a "combination of behaviourism and structuralism," but the 'structuralism' represented is sensationalism, interpreted objectively as far as possible. "By a state of consciousness we shall understand anything of which I am immediately aware—a book, a table, a colour, a pain, my hate, a joy, a memory, or a thought." Comment is needless. In such psychology real introspection is obviously at a discount. But is it psychology? The only thing that gives it the semblance of psychology is the use of terms, which, from the consistent behaviourist point of view, must be quite meaningless.

JAMES DREVER.

An Introduction to Modern Logic. By RUPERT CLENDON LODGE, M.A., Assistant Professor of Philosophy in the University of Minnesota, some time John Locke Scholar in Mental Philosophy in the University of Oxford. The Perine Book Co., Minneapolis. Pp. xiv, 361.

The author tells us that what he means by Modern Logic is what he finds, for example, in the views of Lotze, Bradley, Dewey, and Wundt. He purposely omits "Aristotelian" and also Symbolic Logic, seemingly for the sake of securing unity in his introductory treatise.

Thus what he offers is a plain account of Judgment, Inference, and the Method of Science, in three successive books, without any reference to logical technicalities, excepting such general terms as analysis, induction, identity, organisation. His plan, I think, is a good one.

What he is really doing throughout is to trace, in successive ranges of expansion, the process of introducing in connexion with sensory data the intellectual "ideals" or "standards" of "identity," "difference," "internal" and "external organisation".

In the first Book these are applied successively to the four types of "perceptual," "experiential," "symbolic," and "transcendent" judgment (I think here we are on thin ice philosophically speaking, but the author is not intending to deal with philosophy); and in the second and third Books respectively to the theory of inference and to the method of science; in both of which they develop into accounts of synthesis and analysis, and other factors of method. The description of the method of science is the longest part of the work, and obviously follows the headings of Wundt's *Allgemeine Methodenlehre* (chapters i. and ii. of his *Logik*, vol. ii.). Proof, *e.g.*, is separated from inference and discovery, and treated as a method of exposition. I think the sub-division and lengthening of the book thus effected is unfortunate, for the book is long considering its character, though it is in appearance a small volume. I wish the Method of Science could be omitted, and its best chapters, xxi. and xxvi., where there is a good account of analysis and synthesis taken together, and so too of induction and deduction, fused with the account of inference in Book II.

In the pursuit of knowledge through the application of the "ideals" or "standards" we construct "mental models," *i.e.*, mathematical or causal schemes intended to interpret this or that set of data; and these may have perfect validity ("objectivity" and "completeness") when applied to "mind-made entities" (anything from a puzzle-box to a triangle), but there is always a gap between them and "natural phenomena". All this raises problems which I cannot now discuss.

The illustrations are extraordinarily copious and ingenious. One, for instance, points out that a cipher may have a group of five letters to each letter indicated, so that if you begin by analysing it into single letters your analysis will be wholly irrelevant. They are a good deal drawn from the psychological laboratory, where, it seems, you have puzzle-boxes, "artificial crimes," and many other dodges. The mathematical beginning of a science is illustrated by a trick in experimental æsthetic. You have a celluloid dachshund, which you can lengthen and shorten at pleasure by an apparatus which admits of exact measurements in millimetres. The problem is how long a dachshund should be *ceteris paribus* in order to give the most æsthetical satisfaction. You collect judgments and treat them mathematically, and so make a beginning of "experimental æsthetics". These illustrations partly suggest what the author means by "mind-made entities".

I think, on the whole, the book is stimulating and suggestive. Only the attempt at extreme precision, by the repetition of the same standards all but verbatim for each successive topic, leads, I must hold, to needless repetition. You are told three or four times over in the theory of judgment that if you have mere identity, judgment disappears.

BERNARD BOSANQUET.

The Philosophy of Fine Art. By G. W. F. HEGEL. Translated with Notes by F. T. B. OSMASTON, B.A., Author of the *Art and Genius of Tintoret.* London: Bell & Son. 4 vols. Pp. xxii, 405; xiii, 401; xv, 430; xix, 356. 25s. net.

I never expected to see Hegel's Lectures on Æsthetic in an English translation. It must have been a work of enormous labour; and Mr. Osmaston and his publishers have earned the gratitude of all devotees of æsthetic philosophy.

The book is enormously long, and the novice might be inclined to disparage it in comparison with, *e.g.*, Croce's philosophy of art which can be read with pleasure in a day or two, or with heaps of special textbooks fully up-to-date. On this head I feel no doubt at all. Certainly all students will familiarise themselves with Croce's work; but if they want a thorough and solid foundation for the idea of "expression," neglecting neither what is to be expressed nor how it passes into expressiveness, I believe they will find what they want, thoroughly and completely, in Hegel alone. Hegel does it all himself; he refers to no textbooks—I suppose there were hardly any to refer to—about history, or religion, or special arts, or light and sound, or verse and metre. No doubt his views on particular points are often antiquated; but you feel that he has worked through the whole detail with wonderful insight, and you cannot safely throw aside his treatment of any problem. His delight in Shakespeare is charming.

The very full table of contents, of which Mr. Osmaston has completed the defective parts, in itself no small service, will assist a reader in turning his attention to points which specially interest him, and there is no harm in saying that he will do well, if he is able, to look up the decisive passages in the original. I find this to be so really with almost all translations, especially in philosophical matter.

To anyone approaching the work for the first time, I should suggest a reference to vol. ii., p. 391 ff., for Hegel's "really splendid defence of modern art," as a very capable art-student described the passage to me the other day. I wish Mr. Osmaston had boldly rendered the striking phrase that modern art "Zu ihrem neuen Heiligen den Humanus macht," by some such words as "adopts 'St. Man' for its saint of to-day". And a comparison of this with vol. i., p. 142, tells us at once the truth about the idea that Hegel held fine art to be a thing of the past.

Mr. Osmaston, I am bound to admit, is not always accurate in translation. But his evil destiny befalls him mostly in matters of historical reference and illustration, which matters little to the philosopher. I do not know how he came to write Hesiod for Herodotus (vol. ii., p. 167), nor, obviously, in a footnote of his own (vol. i., p. 367) the "Merchant of Venice" for "Romeo and Juliet"!

The frontispiece is a fine engraving of the well-known medallion of Hegel.

BERNARD BOSANQUET.

The Foundations of Music. By HENRY J. WATT, D.Phil. Cambridge: University Press, 1919. Pp. xvi + 239. 18s. net.

"In this volume," the author tells us, "I have sought more or less evenly to serve the purposes of both the psychologist and the musician. In order to make the work complete in itself up to a certain point I have traversed the ground covered in the psychological part of the earlier volume [*The Psychology of Sound*], omitting only those parts that are of little interest to the musician. . . . Those who are familiar with the previous volume will hardly find anything new before chapter ix., p. 55," (pp. viii, ix).

Those who have read Dr. Watt's previous book will recall that he supposes that tones can be arranged in a series of diminishing 'volumes,' which vary inversely with the pitch of the tones. By volume he means "that difference between tones of different pitch that makes the low tone great, massive, all-pervasive, and the high tone small, thin, and light" (p. 6). He supposes that "the pitch of a high tone lies a little to one side of the pitch of a tone just lower in pitch; and the pitches of all tones together form a single linear series, having the tone of greatest volume at one end, and the tone of least volume at the other" (p. 10). According to Dr. Watt, it is the 'balance' between the volumes of two tones that determines their fusion or consonance. On these hypotheses he connects the inversions of a chord with the continuity of 'pattern' made possible by the 'volumic' relations of the octave and of the intervening intervals.

Dr. Watt is on firmer and more satisfactory ground when he comes to deal with the rule forbidding consecutive and (later) 'hidden' octaves and fifths and the minor restrictions imposed on the sequence of other less consonant intervals. He arrives at the important conclusion that the offence is greater, the more consonant be the interval.

He applies the word 'symphony' to the tones of an interval that "tend to become indistinguishable through too much unitariness or fusion" (octaves, fifths, fourths); the word 'diaphony' to the tones when "they sound through or against one another, disturbing and confusing one another" (seconds, sevenths); and the word 'paraphony' to the balance of simultaneous tones "so that melodies formed of such intervals will flow evenly side by side, the one [melody] not inhibiting the apprehension of the other" (p. 155) (thirds, sixths). Now music, argues the author, has developed from melody—from melodic movement. It has evolved to reach the present "great era of polyphony, of which the essential problem is the construction of concurrent melodic streams that will leave each other's motions unimpaired and produce effects of arrest as they may be desired" (p. 213). It is to prevent such arrest, Dr. Watt believes, that the use of consecutive octaves and fifths are forbidden, their extreme consonance (symphony) destroying distinguishability.

So too, "the reason why similar motion is so often forbidden . . . is not that such motion is a bad method in itself, but because it is ineffective to remove the undesirable characteristics of the intervals concerned" (p. 207). On the other hand, contrary motion serves to reduce the symphony and diaphony to the desired state of paraphony. The same need for paraphony determines the tendencies and possibilities of the resolution of dissonances and it explains the difficulties created by the fourth from the bass (owing to the proximity of the fourth to the paraphonic third).

Dr. Watt lays stress on the importance of a future statistical analysis of the exceptions to the 'rules' of musical composition, and on inquiry into the factors that modify the paraphonic properties of intervals. He

considers that "the study can now be taken over by the musician himself and pursued without the further help of psychology . . ." (p. 225).

The Infinite Attributes of God. By Rev. W. Powell, M.A., B.D. London: Arthur H. Stockwell. Pp. xxvii, 220.

After a short Introduction the author proceeds to treat of God's Omnipotence and Omniscience, and then discusses Temporal and Spatial Infinity, God s Qualitative Infinity, and Infinity of Being. In the course of the book he passes rapidly from one problem to another, dealing with many theories by the way and trying to meet objections to his own views. Mr. Powell shows a good deal of philosophical knowledge, and writes clearly. He accepts the statement that God is Ground of all existence and perfect in His Nature. The reality of a Perfect Being seems to the author to be assured by the universal rational ideal of perfection. The existence of good, it is argued, proves the existence of a Complete Good, and morality logically necessitates the existence of God. There is a failure here to distinguish a postulate from a logical deduction.

God's Omnipotence and Omniscience follow from His Perfection. To be omnipotent does not mean to be able to harmonise what is contradictory, and from the moral point of view there are things God cannot do. But His power is not fettered by any alien element, and His ability depends solely on His Nature. Omniscience is implied in the divine moral perfection. As God creates all things, He knows their nature and what will issue from them. Nor is it otherwise with man's action: it proceeds from his nature and so is foreseen by God. Presumably Mr. Powell does not hold that man's evil nature is due to God, and, if so, his argument is defective. He suggests that evil of the positive kind is "explained by the absence of some good" (p. 91), but afterwards we are told that moral evil is not mere defect, it is something positive (p. 203). When he comes to speak of spatial infinity Mr. Powell interprets Omnipresence as the consciousness of all material facts and processes, which, from a religious point of view, seems inadequate. In his last chapter the author states revelant objections to the theory that God is the Absolute and includes in His personal Being all other persons. But his criticism does not always allow sufficiently for the view that there are degrees of reality within the whole.

Mr. Powell's arguments, if sometimes acute, are not very convincing. He raises many questions and passes quickly from them without conclusively settling them. Occasionally the difficulties he deals with are curious. For instance he considers the objection that God may be surfeited with good! (p. 117).

G. G.

Why Do We Die? An Essay in Thanatology. By Edward Mercer, D.D. London: Kegan Paul, Trench, Trubner & Co., 1919. Pp. viii, 202.

Bishop Mercer, in this little volume, deals with an interesting problem, and that in a clear and suggestive way. The style is simple and attractive, and though the form of discussion is popular it is based on sound philosophical knowledge. The writer only treats the question of immortality by implication, and does not seek directly to raise theological issues. He begins by showing that the fear of death has been greatly exaggerated: it is not death but the 'will to live' which causes suffering. Dr. Mercer goes on to consider the teaching of science on the subject, and discusses among other matters "Senescence" and "What Fixes the Term of Life". The latter, he holds, is not explained by nature's care for the species but by the constitution of

the organism itself. This leads him to develop his own view of the organism, which he interprets on monadistic lines. The constitution of the body as a complex of monads shows us both why death supervenes and why there is a good hope of survival. In this section the case for monadism is put skilfully and persuasively. The concluding section, entitled Higher Aspects, though interesting, is somewhat slight and sketchy.

The value of monadism as an interpretation of the organism need not be doubted, but Dr. Mercer seems to think it explains the material phenomena of life, which may be questioned. And he rather assumes than proves that the connexion of monads forming an organism must be a temporary one. On this view would not the 'spiritual body' be also temporary?

G. G.

Mind and its Disorders. Textbook for students and practitioners of medicine. By W. H. B. Stoddart, M.D., F.R.C.P. 3rd edition, with illustrations. London: H. K. Lewis & Co., Ltd., 1919.

"Since the last edition," says Dr. Stoddart, "I have fundamentally changed my attitude towards mental disease, having personally investigated very many patients by the psycho-analytic method and thus been convinced of the truth of Freud's doctrines. Mental disease can only be understood by studying the psychology of the unconscious mind of patients, and the physical manifestations of a functional nervous disorder must be regarded as secondary, not primary, as I taught in the first edition." For the psychologist, the chief interest of this statement about the growing influence of Freud lies in the fact that the change of attitude is due to experience of the method. The violence of the antagonisms between the Freudian and anti-Freudian "schools" still continues; but the important point is that the theories of repression, fixation, dream symbolism, and the rest, are being steadily put to the clinical test, and the war has furnished immense masses of new material for treatment. Many orthodox alienists still "resist"; but many others are persuaded that there is definite value in Freudian methods. Dr. Stoddart, who gave a fairly prominent place to psycho-analysis in his first two editions (noticed in Mind at the time) has made a few modifications and rearrangements in the present edition. That a third edition should be called for shows that the book continues to serve a useful purpose as a practical textbook of insanity. There are still many "insanities" that seem to elude either classification or precise description; the classifications continue to shift and alter; but, in a large part of the field, nothing else is at present possible. As in every other field of medicine, so in the insanities, we almost never "get in on the ground floor".

W. L. M.

The Mastery of Nervousness Based upon Self Re-education. By Robert S. Carroll, M.D. 3rd revised edition. New York: Macmillan & Co., 1918. Pp. x, 348.

Nervousness and the need for its mastery must be very widespread; otherwise this book could not have reached a third edition in a year and a half. It is a popular exposition, decorated with a rich rhetoric suited to its purpose. It may be taken as a series of intelligent scientific sermons whose rationalising factor is the idea that harmony of the self may be obtained through adjustment, through the sublimation of strife. The chapters include a definition of nervousness: "Nervousness, then, is truly a mental, not a physical, illness. Nervousness represents a high

capacity for response to external and internal stimuli, with lack of selective and inhibitory control" (p. 16); types of nervousness—the motor type, the hyper-sensitive type, the hypo-chondriacal type, the self-centred type, the repressed type; also chapters on eating errors, the penalty of inactivity, work, play, tangled thoughts, emotional tyranny, the training of will, rebellion, surrender, sublimation of strife, fulfilment of self. The exercises suggested, both mental and physical, have the ring of practical sense and, although in many places the discussions are somewhat vague, the book is stimulating and should be of real service to many. It is set in the key of many other popular products of the more recent applied psychology. It is persuasion rather than science.

W. L. M.

Sommario di Pedagogia come Scienza Filosofica. By GIOVANNI GENTILE. 2 vols. Bari: Laterza, 1913. Pp. xi, 270, 246.

La Riforma della Dialettica Hegeliana. By GIOVANNI GENTILE. Messina: Principato, 1913. Pp. viii, 306.

Principii di Etica. By LELLO VIVANTE. Roma: Maglione e Strini, 1920. Pp. viii, 313.

Morning Knowledge: The Story of the New Inquisition. By ALASTAIR SHANNON. Longmans, 1920. Pp. xiii, 366. 14s. net.

The Philosophy of Giovanni Gentile. By Prof. J. A. SMITH. Aristotelian Society, 1919.

All these writings belong to a certain new departure in European philosophy. At the very least, they amount to an enthusiastic popularisation of idealism; but they claim a good deal more, and that is, to form a body of doctrine in which idealism, without losing its traditional basis, would compete with the ideas of Bergson and the Pragmatists, and would satisfy their principal demands without adopting their errors.

I cannot here attempt a serious review of works which merit so much individual attention. I only wish at this moment to note their common character, and to suggest the line of criticism which they seem to demand, on a first study, though by no means a careless one. I may observe that the same movement includes the works of Benedetto Croce, which I have discussed on other occasions, and to which very similar observations are applicable. The idealist of a divergent type finds in these thinkers much to attract him. To begin with, he finds reawakened the explosive force of the old doctrines; he feels in their advocates a revived fire and pugnacity. The old lesson of Hegel and his sympathisers—that the universe is a single spirit, of whom or of which all appearances are manifestations; that all its manifestations fall within a single experience, compact of experiences; that all of it is life and activity, and outside this living experience there can be nothing—this lesson is here rehearsed with an energy and a passion for which any idealist must be grateful, who rejoices to see his central point of view triumphant in a notable section of the philosophical world, and also for a considerable distance beyond its borders.

But the new doctrine has a further side, to which the ardour of its advocates is largely due, and which may be less welcome to any one who seems to himself to have learnt in a wider school. In its descriptions of the living experience which is the real universe—if it is indeed conceived as a universe—unwonted language is met with. Reality lies in the thinking, never in the thought ("pensato," passive participle); always in the "pure act" of thought ("pensiero," noun). It is self-creative, creative of truth, and ultimately and in itself progressive. This is the "nuova

metafisica della mente" (*Riforma*, 43, 291) which Croce contrasts with the "metafisica dell' ente" (*Teoria e Storia, Filosofia dello Spirito*, iv., 280). The old recognition that truth has an immanent quality, and cannot be determined by an external standard, is present throughout as if a novelty, and is intensified into the doctrine that truth and fact spring spontaneously from creative thinking, and that thus reality is in itself a progress; a progress, therefore, *ad infinitum*, for its dialectic depends on no immanent whole; and always for the better, being inspired by its own indwelling *élan*. "No transcendence of experience, no pre-existing real," are the negative watchwords. The pure act of thought, in its development and self-interpretation as history passing into philosophy, is the type and centre of reality. The creative synthesis *a priori* is its ultimate nature and its only category. Subject, object, and their union are the only terms of its dialectic. Of Hegel's or Bradley's world of appearances the greater part by far is simplified away. Thus (though religion is nominally a term in the progression as representing pure consciousness of the object) "religioni" says Gentile, in full accord with Croce "le quali a rigore non sono se non forme inadequate di sistemi filosofici; filosofie immature——"[1] We hear such language to-day not without surprise.

In their view, a definite saltus from old to new philosophy begins with Vico's revolt against Cartesianism, and the new movement comes to its rights in Kant's synthesis *a priori* and Hegel's logic; the latter of which needs only drastic simplification, and a liberation from much inherited lumber—that is, from its grasp of actual experience—to become this new philosophy, advocated with passion and with a considerable display of learning. I have my doubts, as I have said before, as to the soundness of insight manifested in this learning, though it is certainly based on careful and serious study. It is, for instance, a shock to the student of Plato, to find that because of the doctrine of Forms, he is held to be the representative of a theory of pre-existent, transcendent, and immutable reality, forming a second world over against the world of human knowledge, which has no function but to copy it. Thus "Platonising" dialectic and metaphysic, are treated wherever mentioned, as "the dialectic of death," and as the "old" or exploded metaphysic. And it is assumed as obvious that "l'uomo antico si sentiva malinconicamente diviso dalla realtà, da Dio; l'uomo moderno sente in sè Dio".[2] We know that it is wrong to look to Plato for modern idealism; but that he laid the ghost of the two-world theory, and initiated the impulse which led in Christianity to the idea of human-divine unity, I should have said was certain. I do not think that these scholars, learned as they are, have full and genuine sympathy with the Hellenic mind.

Thus the comprehensive reality as indicated by Hegel's or Bradley's idealism, with the diversified life of its various appearances, all having their rights and all pointing to the whole, but no one of them identifiable with it *in propriâ personâ*, is exchanged for a view in which the temporal thought-process, a progressive stream, actual in the human spirit and in the succession which forms its history, is the prerogative reality; and the other aspects of our rich experience all collapse, as it were, into the flux of history and its interpretation by philosophy. A single history, noticeably and emphatically centred in the human mind, whatever in addition it may imply,[3] replaces the "Absolute," "which has no history of its own, though it contains histories without number".[4]

[1] *Riforma*, p. 116. [2] *Ibid.*, p. 76.

[3] Croce certainly allows some implication beyond the series (*Filosofia dello Spirito IV. Metodologia*).

[4] Bradley, *Appearance*, p. 499.

In this impression I am chiefly referring to Croce and Gentile, and to the striking account of the latter offered by Prof. Smith in his Aristotelian paper. I differ from Prof. Smith with the greatest hesitation and reluctance; but I must set down the fact that as in Croce, so in Gentile's *Pedagogia* (a treatment of philosophy as the formation of souls), and in his *Riforma*, I am continually shocked by what seems to me to be overstraining of undeniable truths—the conversion of familiar platitudes into untenable paradoxes.

Take the very first case of creative knowledge from the former; "conoscere la poesia del Petrarca significa fare quella poesia nè più nè meno di quel che l'abbia fatta il Petrarca".[1] Surely this is over-strained. It contains an obvious truth, that our receptivity is creative; but, surely, an obvious falsehood, as if the poetry were not already a special appearance of the spirit, appealing readily and peculiarly to the kindred spirit in man. And so I find it throughout, especially in the *Riforma*. There is, as Prof. Smith explains, a thought belonging to the "noi," and here, in this and its implications, if I understand aright, really lies the whole and the universe. But, then, surely, *this* is an implicit real, and the "attualità" of the "atto puro" is gone. The thought which is reality cannot be the process of philosophising, as Green wisely warned us long ago (*Works*, vol. iii., p. 143). The fact is, "the whole" cannot be, *in our sense*, a thought at all. It is a whole which lives in all its manifold appearances, and cannot be reduced to any one of them. The conception of a self-creative progressive real, which is pure thinking, destroys all meaning in "the whole". There *is* no whole, and the unending dialectic has no mainspring.

Morning Knowledge shows much agreement with Gentile, though I suppose the author to have been wholly unacquainted with his work; and the coincidence is certainly suggestive. It is a very remarkable book written by a British officer when prisoner in Turkey. In form it is narrative, conversational, fantastic, rhapsodical. It is impassioned and sincere, and shows much insight. I naturally regret its contempt for logic, and venture to hope that the gifted author will bring the sides of his thought more into connexion in years to come.

The gist of the work, which it is a shame to treat so baldly, lies if I follow it right, in drawing out into a historical flux the familiar philosophical view of the Christian scheme of salvation, embodying in it stages in the development of a finite God, and his passage, and that of all creation, to perfection by human aid. It is strongly creationist, insisting for example on the senses as creative and not receptive. Its word "fiam" corresponds to Gentile's "farsi". Like Gentile too it wholly rejects the "pre-existent" real or God. The world of space and time is, it would seem, to disappear in the end; whether literally, or only from a higher insight, I am not sure. It is very important that the actual progress makes possible and demands the attainment of individual perfection and apparently the ultimate negation of the unending process. Of course if progress is the main fact of the universe, there must be this difficulty; either it really leads to a *terminus ad quem* and contradicts itself, or it goes on *ad infinitum*, and then a doubt arises in what sense it is truly progress. The mode of thought we are discussing illustrates these difficulties throughout, and forbids the solution which the idea of religion would offer.

Morning Knowledge is inclined to write over its lecture room "No

[1] *Pedagogia*, vol. i., p. 8.

admission to any *not* ignorant of mathematics".[1] This again coincides oddly with a prejudice which characterises the movement as far back as Vico. The side of discovery in mathematics seems not to be understood, and its connexion with space, I suppose is exaggerated.

Signor Lello Vivante is thoroughly with Croce and Gentile in their creationism, and having made some study of English writers, censures both Green and Bradley for treating God and reality as pre-existent (già data). I almost venture to suspect that there is here, as throughout the movement, perhaps especially in its estimate of Plato, some ambiguity as between transcendence of experience and transcendence of immediacy.[2] The latter, of course, all thinkers must recognise and employ; and I think there is a tendency, as in Bradley's critics at home, to impute the former when only the latter is present.

But Signor Vivante is an original writer. His account of reason as one with "il più vasto amore" is fine. His emphasis, too, perhaps following Maeterlinck, on modern sensitiveness to the value of silence, recalls an important development in *Morning Knowledge* (where silence is the creative mood) and of course much that is noteworthy in the religious thought of to-day.

His ethics is an analysis of the modes in which the universal is present in the individual. "Non siamo noi che viviamo, ma vivono le nostre ragioni; e quanto più è presente nella creatura la creazione, il principio o esigenza infinita . . . tanto minore realtà ha per noi la morte."

I do not at all deny that idealists have much to learn from the energetic and uncompromising attitude of these great Italian thinkers; and naturally I believe that all who are not idealists have *very* much to learn from them. But for myself I cannot follow the point of view which proceeds from the immanence of reality in experience, to the universe as self-creatively progressive by a pure act of thought in the human spirit. The question for me is "*What is* the spirit?" Is it not something larger than the pure act of thought? Does it not live, really and characteristically, in the splendour of external nature as in religion and in the common will, and are all these a mere deposit or fossilisation of pure acts of thinking?

BERNARD BOSANQUET.

La guerra eterna e il dramma dell' esistenza. By ANTONIO ALIOTTA. Naples (1917). Pp. 217.

A brief and eloquent sketch of an ethical philosophy by Prof. Aliotta whose name and merits will by now be, I trust, familiar to most readers of MIND. In most respects Prof. Aliotta's present work follows the lines that one would expect in the author of *La Reazione idealistica contro la Scienza*. There is the same repudiation of materialism and mechanistic interpretations of the world and the same vigorous defence of spontaneity and contingency. But on one important point Prof. Aliotta has gone over bag and baggage to the camp of the Pragmatist hustlers. The "epistemological proof of the existence of God," which was worked into the English edition of *La Reazione idealistica contro la Scienza*, has disappeared, and we get instead violent diatribes against Theism as only

[1] *Cf.* "As Renan has remarked, the modern philosophical school should have as its device 'Let no one enter here who is not acquainted with the human spirit,'" Kemp Smith, *The Present Situation in Philosophy*, Inaugural Lecture.

[2] Bradley, *Truth and Reality*, p. 153.

fit for the "weak" and "infirm in spirit". The author's present view is that the universe is after all a magnified counterpart of one of the "fronts" in the great war, a scene "swept with confused alarms of battle and flight, Where ignorant armies clash by night". What order there is in the Universe is only born of the struggle for existence (or perhaps one should say, for domination) between utterly self-centred and self-willed "souls". Whether order and good will prevail or succumb, we do not know, and Prof. Aliotta seems to think that if we did know, since life would cease to be pure adventure and haphazard, it would lose all its spiritual value. I own I cannot see much more in Prof. Aliotta's pleadings for his new creed than a temporary aberration begotten of war-fever. It is true I am not surprised that his "gnoseological proof" of God's existence has failed him, for I have always thought it the one serious blot on an otherwise great work. But his present arguments for Atheism strike me as no better than the worst arguments ever put forward for Theism. In the main his contention is the old one that if God exists all that happens must be predestined from all eternity, and therefore our moral conflicts are only stage-warfare. "The fight is fought, the victory won," as the Easter hymn says, and therefore it cannot matter what we do or refrain from doing. I should have thought it a sufficient retort that even if the victory of good in the world is certain, it depends wholly on our own doing whether *we* share the "song of them that triumph" or the "weeping and gnashing of teeth" of the defeated fiends. As for the general arguments for Predestinationism, I take it that when Prof. Aliotta was a year or two ago "proving" the existence of God, he was well aware that orthodox Christians do not believe that God's omnipotence and omniscience are incompatible with human freedom, and that he then agreed with the Christians. I cannot see that he adduces any reason for his change of view beyond the statement that if there is a divine mind, whatever that mind thinks of must *eo ipso* be existent fact. *I.e.*, if God exists, He can only know propositions which assert the existence of the subject-class. I cannot myself see any reason at all for this doctrine, and I think my honoured Italian colleague would have done well to ponder the discussions of the question about God's knowledge of *possibilia* in the great scholastics before committing himself to it.

Nor do I see that Theism is a refuge for the "weak". They were not weaklings who inscribed on their banners such devices as "Fight the good fight," "Quit you like men," "Put on the whole armour of God," "Remember Christ Jesus who . . . witnessed the good confession," and a hundred more. I fear Prof. Aliotta has hurriedly confused assurance that victory will come with assurance that a particular soldier will come untouched out of the fighting. And I am sure that he is dangerously near a deadly moral error when he seems to argue that good derives all its value from the fact that some souls are ready to fight for evil. This is to deny that there is any intrinsic difference between good and evil. For, if values are simply created by the conflict, it follows that whatever any souls are ready to fight hard for must be very good. Nietzsche will be right in saying that a good—*i.e.*, a stubbornly-waged—fight sanctifies *any* cause. Yet Prof. Aliotta himself plainly does not believe that the cause of Austria against Italy is a good one, though he would no doubt admit that the Austrians are stubborn enough in fighting for it. I am still more amazed that a philosopher of his calibre should propose to say "not to God but to man, Thy will be done in heaven as it is in earth". (Though *if* the prayer only means that the will of good men is to be done in heaven no more effectually than it is being done on earth in the welter of war, the petition is quite a modest one.) I am sure that if

Prof. Aliotta had found this utterance, as he well might have done, in a Comtist work, he would have asked the pertinent question to what actual man or body of men a good man would ever address such a prayer without serious qualification. Is humanitarianism to end by bringing us back to the adoration of a "dominus et deus noster Domitianus"? Whether this prayer is ever likely to be answered, as Prof. Aliotta himself suggests it may be, by the development of science to the pitch at which we shall be able to modify the earth's orbit to suit our own tastes, or combine with souls dwelling in the abysses of space to achieve yet greater marvels the Professor's readers will judge for themselves. To myself Prof. Aliotta's incredulity about God seems only to be matched by his unlimited credulity where Man is concerned. But I should not be surprised if, when the fit of war-fever is over, the Professor recants his doctrine. I may add that there seems to me to be a fundamental confusion about a vital point in the argument. It is declared in an early chapter that all souls must be eternal and unoriginate on the ground that nothing is real but what is experienced, and the "birth" (or "death") of a soul can be experienced neither by the soul in question nor by any other. (For, *ex hypothesi*, the soul which is "born" (or "dies") is not there to experience anything before (or after) the process of "birth" (or "death") is complete, and any other soul could only experience the "outward and visible signs" of the event, not the "being born" or "dying" itself.) But when we come to the pages which expound the process by which the blind "struggle" creates order and progress it has to be assumed that such events as the "fusion" of the "souls" of distinct "cells" into one are of constant occurrence. Does not such a process amount to the "birth" of a new soul and the "death" of an old one? And who in such a case "experiences" the process from within? The argument of the earlier chapter may be turned against its author. For the soul which is "fused" or "absorbed" cannot experience its own absorption unless it can be still there after its "death," and the other soul which is enriched by the fusion cannot experience it from within. Prof. Aliotta cannot really have it both ways.

A. E. T.

Received also :—

Cyril T. H. Walker, *The Construction of the World in Terms of Fact and Value*, Oxford, Blackwell, 1919, pp. vii, 92.

Walter B. Cannon, *Bodily Changes in Pain, Hunger, Fear, and Rage*, New York and London, D. Appleton & Co., 1920, pp. xiii, 311.

Les Lettres Provinciales de Blaise Pascal, edited by H. F. Stewart, Manchester University Press, London, Longmans, Green & Co., 1920, pp. xxxviii, 360.

Joseph A. Leighton, *The Field of Philosophy*, Columbus, Ohio, R. E. Adams & Co., 1919, pp. xii, 485.

G. D. H. Cole, *Social Theory*, London, Methuen & Co., 1920, pp. 220.

W. B. Rilsbury, *The Psychology of Nationality and Internationalism*, New York, London, D. Appleton & Co. 1919, pp. viii, 314.

R. F. Alfred Hoernlé, *Studies in Contemporary Metaphysics.*

Charles F. Hooper, *Common Sense and the Rudiments of Philosophy.*

Adolph Cohen-Kysper, *Rückläufige Differenzierung und Entwicklung*, Leipzig, J. A. Barth, 1918, pp. 85.

Adolfo Levi, *Il Concetto del Tempo*, Milano, Vita e Pensiero, 1919, pp. 106.

Henry Bradford Smith, *Non-Aristotelian Logic*, Philadelphia, The College Book Store, 1919, pp. v, 40.

Moritz Schlick, translated by H. L. Brose, *Space and Time in Contemporary Physics*, Oxford, Clarendon Press, 1920, pp. 88.

Stewart A. McDowall, *Beauty and the Beast*, Cambridge University Press, 1920, pp. 93.

Stephen Ward, *The Ways of Life*, Oxford University Press, 1920, pp. 127.

Six Theosophic Points, by Jacob Böhme, translated by J. R. Earle, London, Constable & Co., 1919, pp. vii, 208.

H. R. Marshall, *Mind and Conduct*, London, Williams & Norgate, 1919, pp. ix, 236.

Frederick Bligh Bond, *The Gate of Remembrance*, Oxford, Blackwell, 1920, 3rd edition, pp. xvi, 176.

Université de Louvain, Annales de l'Institut Supérieur de Philosophie, Tome IV, Paris Librairie, Felix Alcan, 1920, pp. 623.

R. R. Marett, *Psychology and Folk-Lore*, London, Methuen & Co., 1920, pp. ix, 275.

The Rev. Canon J. Gurnhill, *Interpretation of the Spiritual Philosophy*, London, Longmans, Green & Co., 1920, pp. xi, 179.

F. W. Westaway, *Science and Theology*, London and Glasgow, Blackie & Son, 1920, pp. xiii, 346.

Nicholas Murray Butter, *Is America Worth Serving?* New York, C. Scribner's Sons, 1920, pp. xiii, 399.

Heinrich Hasse, *Das Problem der Gültigkeit in der Philosophie David Humes*, Münich, E. Reinhardt, 1919, pp. 193.

Clement C. Webb, *Divine Personality and Human Life*, London, George Allen & Unwin, New York, The Macmillan Co., 1920, pp. 291.

VII.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. xxviii., No. 6. **W. M. Urban.** 'The Nature of the Community.' [Defends a modified form of the over-individual and monistic conception of community. From the standpoint of 'meaning, the psychological mode of the organic formula, with its significant assertions of what the social order is not, is the most adequate we have; and the omnicompetence of the state means simply its concern with the ethical minimum, its final authority in some things which affect all elements of the community.] **H. J. Laski.** 'The Pluralistic State.' [The monistic state is a hierarchical structure with power collected ultimately at a single centre. Advocates of pluralism contend that this is administratively incomplete and ethically inadequate. Decentralisation is the only preventive of consistent degradation of freedom and the only effective cure for undue localism of ethical outlook.] **M. P. Follett.** 'Community is a Process.' [Community is a creative process of integration, with neither absorption nor compromise. Society is neither an organism nor a collection of units, but the whole which lives in every one of its members and of which every one of its members is potentially the whole.] **J. H. Tufts.** 'The Community and Economic Groups.' [Economic ends and powers are coming to play a relatively larger rôle, political (and religious) ends and powers a relatively lesser rôle, in the life of the community. There are three possibilities: society may extend its political organisation, negatively by restricting economic inequalities or positively by assuming economic functions; it may favour the economic group and embark on syndicalism; or (and this is the most promising road) it may delegate to economic groups as committees responsible functions for certain purposes.] Discussion. **M. W. Calkins.** 'The New Rationalism and Objective Idealism.' [Spaulding has ignored the self, and makes his point against objective idealism only by stating the doctrine so that it presupposes the existence of many entities externally related.] **E. G. Spaulding.** 'Rejoinder.' [The self is a highly equivocal term; and whether terms are related internally or externally, it is the fact that they are related that furnishes the idealist with his problem.] **M. F. Washburn.** 'Dr. Strong and Qualitative Differences.' [The principles of physical science can easily account for the illusion of simplicity and continuity where reality is atomistic, but not for the illusion of qualitative differences where realities are qualitatively identical.] Reviews of Books. Notices of New Books. Notes.—Vol. xxix., No. 1. **N. K. Smith.** 'The Present Situation in Philosophy.' [Of the three typical philosophies, scepticism, perennially useful though continually transcended, is now in abeyance. Our choice lies between naturalism and idealism. Naturalism regards man's capacities, even the highest, as intelligible only as they are exercised in subordination to the requirements of his terrestrial environment; we attain absolutism in the intellectual domain alone. Idealism regards man as a microcosm, prefiguring in his art, morals, social institutions and religion, the wider reality which, as finite, he cannot more directly approach; we attain

absoluteness in all these other fields.] **A. K. Rogers.** 'The Case Against Dualism.' [Running reply to objections urged against representationalism by Holt, Bosanquet, de Laguna, Alexander, Woodbridge, Jones, Creighton, James, Russell, Schiller, Leighton, Bakewell, Dunlap, Bradley and Moore.] **J. A. Gregory.** 'From the Old Realism to the New.' [The most impressive type of reality is the animated or conscious external object, and the concepts of mental existence have always been modelled on this prototype. Thought has therefore moved first away from the primary model, defining mental existence by unlikeness to it (Verworn, Freud), though still moulding the mental in the likeness of the external world (the subconscious); and then back again toward the model (Ward, Alexander, Pringle-Pattison, the New Realists), though with like intermediation (Pater's general consciousness).] **R. A. Tsanoff.** 'The Destiny of the Self in Prof. Bosanquet's Theory.' [Bosanquet's critics warn against a possible misapplication of his theory. If we are not to forget the abstraction involved in attending to the 'subordinate individual' *par excellence*, we must also remember the corresponding abstraction involved in attending to the Absolute *par excellence*. The theory as a whole would have been better with more Bosanquet and less Bradley.] Discussion. **J. Lindsay.** 'The Nature of Knowledge.' [Critique of Stout. Current philosophy suffers from the tendency to biologise perception and intelligence, and to treat perception as natural event rather than as perception of natural event.] Reviews of Books. Notices of New Books. Summaries of Articles.

Journal of Philosophy, Psychology, and Scientific Methods. xvi., 21. **L. L. Thurstone.** 'The Anticipatory Aspect of Consciousness.' [It is usual "to refer the anticipatory aspect of consciousness to the conative categories," but if we start from the reflex arc and "consider consciousness as in its essence a process of selecting an adaptive response," we find that "every intelligent response constitutes the conclusion of an act in which an earlier incomplete and unparticularised stage was conscious," and "may define intelligence as the remoteness from the overt act at which the reflex circuit becomes conscious," and finally arrive at the conclusion that "every psychosis actually *is* an unfinished act in the process of being defined into an overt response".] **H. T. Costello.** 'Relations between Relations.' [It is vain to call relations 'internal' because "internality to a thing can have no meaning whatever until you first define your 'thing'". The new realists instead of trying to prove that relations were 'external,' "should have swept aside the whole question with the single comment that 'thinghood' is a vague popular concept".] **H. T. Moore.** 'A reply to "The Defect of Current Democracy".' [*Cf.* xvi., 14. History is appealed to to show that democracy is in fact less repressive of originality than aristocracy.] **H. B. Alexander.** 'The New State.' [A review of Miss M. P. Follett's book with this title.] xvi., 22. **M. T. McClure.** 'Liberty and Reform.' [Subjectivism drifts towards anarchy, institutionalism toward tyranny. But subjectivism always fails, as is proved by the Sophists, the Stoics, Rousseau, the French humanitarians, and the Russian Bolsheviks. In the (improbable) event of his reading this, Lenin would doubtless smile.] **J. B. Pratt.** 'Realism and Perception.' ["Perception is the great stronghold of realism," but neither naïve realism, nor Lockian dualism, nor neo-realism, can give a tenable account of it. There is always either failure to account for illusion or for true perception, or for both, as in 'new realism,' which comes to grief over both Scylla *and* Charybdis. The psychologists mostly endeavour to represent perception as exhausted by sensations and images and shrink from the *meaning*

and *outer reference* of the process. But this is due to their intellectualism; "the percept is there not so much for its own sake as for the sake of guiding our action upon the external environment" and it "*means* more than it is". All these troubles are due to a "confusion of content with object".] **H. H. Bawden.** 'Psychology and Scientific Method.' [Psychology like every science makes play with "guiding fictions"; its "laws and principles are merely our ways of conveniently handling our environment in the effort to shape it to our ends". Among such fictions is 'consciousness,' which the psychologist found "at once indubitable, immutable, indiscerptible and indefinable. He couldn't define it because he was seeking to state it apart from the very processes which alone could give it any content or meaning."] xvi., 23. **L. E. Hicks.** 'Reason and Common Sense.' [Criticises Russell's doctrine of infinity and the juggling by which it is supported, pointing out that "it is only points and instants that admit of genuine one-one correspondence between part and whole. Their amazing capacity for this trick is wholly due to the fact that points have no extension and instants no duration." Concludes that, as ever, "the infinite has been a word to conjure with".] **A. P. Weiss.** 'The Relation between Physiological Psychology and Behaviour Psychology.' [They are not to be identified. Behaviourism is not dualistic nor introspective. Its method is "that of a statistical, genetic, and mechanical analysis of those movements that form the basis of human interaction". Its subject-matter is not 'mind,' but "conduct regarded solely as a mechanical function of the environment and the reaction system".] **M. W. Calkins.** 'Spaulding's Relations and Subsistent Entities.' [Protests against his "identification of the new logic with the new realism," and his subsistent entities, which are neither physical nor mental. For these cannot be defined except in terms of consciousness.] xvi., 24. **W. H. Sheldon.** 'The Asymmetry of Reality.' [All things are 'asymmetrical,' *i.e.*, "composed of units which are unequal in function and value," *ad infinitum*. After suggestively tracing 'asymmetrical control' from stellar systems to atoms and to politics, the author suggests that it obtains because a complete equilibrium is highly improbable and "the only collocations that will be strong enough to survive the buffets of the environment are those in which one or a very few are so much stronger than the rest as to be able to hold several in equilibrium". The result is, metaphysically, a sort of pluralism which does not deny a One, but holds that it may be very unimportant. As gravitation hardly counts as between stellar systems, so with minds; "many minds are no doubt spiritually as separate as the stars".] **N. Wilde.** 'Plural Sovereignty.' [Protests against H. J. Laski and G. D. H. Cole, on the ground that they fail to recognise "the necessary demand for unity in the life of reason".] **D. Drake.** 'Is Pleasure Objective?' [*vs.* W. D. Wallis in xvi., 12, 14. He is accused of perverting terms, confusing the physiological-psychological and the ethical sense of 'pleasure,' and throwing no light upon the selection of 'life-purposes'.] xvi., 25. **M. R. Cohen.** 'Communal Ghosts and Other Perils in Social Philosophy.' [Contributes to a Discussion in the American Philosophical Association on *The Nature of the Community*, an exceedingly clear-headed and pungently-worded protest against the notion that it is high time that philosophers justified their *raison d'être* by rushing into practical politics—on the side which happens to be popular; and beseeches the philosopher to remain impartial and critical—even of his own ability to solve problems which have baffled economists, jurists and statesmen.] **F. J. Teggart.** 'Anthropology and History.' [To get them to co-operate would be as great an advance and revolution as the Darwinian Theory.] xvi., 26. **J. M. Warbeke.** 'Instrumentalism and Teleology.' [The paper "will attempt to throw light upon the meaning

and implication of the idea of purpose as applied to a process of knowledge and then to consider the method known as Instrumentalism". It also attempts to reply to criticisms of E. E. Sabin and R. B. Owen in xvi., 18.] Abstracts of Papers on *The Nature of the Community* by **W. M. Urban, M. P. Follett, H. J. Laski** and **J. H. Tufts,** read at the Meeting of the American Philosophical Association, December, 1919. xvii., 1. **S. B. Goss.** 'From the Common-Sense Level.' [Considers that both anti-intellectualism and science have committed *felo de se.*] **M. Picard.** 'The Psychological Basis of Values.' [Discusses divergences between the accounts of values given by Profs. Dewey and Bush. Recognising that "no thorough-going analysis of values and valuation from a strictly empirical standpoint has yet appeared," and that "the study of values . . . is yet in its youth," he suggests that "the psychological basis of immediate values is to be found in the aspect of feeling, and that of contributory values, in the aspect of cognition".] xvii., 2. **W. Fite.** 'Ritter's Organismal Conception of Life.' [An appreciation of an important work in two volumes by a California biologist on *The Unity of the Organism or the Organismal Conception of Life*, which opposes every theory of 'elements' and insists that the organism is a whole, and as a whole determines every vital function. "Every tissue and every chemical reaction, whatever general features it may have, is also characteristic, not only of the species in question, but of the individual." The organism is not a chemical product, but a chemical laboratory which runs itself in its individual way (*cf.* precipitin tests of blood relationship). Ritter's method is radical empiricism, and so does not shrink from acknowledging creativeness, or even pan-psychism. But, Fite asks, does not this conflict with the conservation of energy?] **F. C. S. Schiller.** 'Truth, Value and Biology.' [*Cf.* xvi., 9 and xv., 19. After criticising W. M. Wells's accounts of 'the pragmatic fallacy,' the meaning of truth and the relation between logic and psychology, goes on to examine the relations of truth and value, and the biological control of truths. It is not true that 'errors' are mutable and 'truths' eternal; actually "it is 'truth' that changes, and 'errors' that persist unchanged from age to age". For 'truths' are beliefs that admit of degrees and shades, varieties and variations, and the relation of beliefs to action is not a simple one, nor can "the general principle that action is the ultimate test of belief . . . be applied to everything that calls itself a belief". The cases of professed beliefs which are *not* enacted, and of 'purely theoretic' beliefs which are not supposed to affect action, are considered, and it is shown that "the testing of beliefs by action fails in the case of *complete intellectualism*". This however renders it difficult to distinguish it from complete insincerity. As for the biological confutation of pessimism, it is evidently not complete, because (? incomplete) pessimists continue to exist. They appear to be adapted to some conditions of life. Life therefore is such that *both* pessimism and optimism are 'true' and rooted in reality. This proves that on this, as on other philosophic issues, the 'real' does *not* determine our beliefs univocally, and the personal bias of the believer can *not* be eliminated. The truth is that "depersonalisation is a *fiction*. It is a fiction, moreover, which conceals from our view all the subtlest and most interesting influences of vital conditions upon beliefs, and renders impossible any coherent and intelligible accounts of the relations of truth and value."] **R. M. Eaton.** 'The Logic of Probable Propositions.' [Concludes that "although specific probabilities like specific truths are to be measured by fact, the laws of combining probabilities into conjunctions, disjunctions, or inferences lie within the realm of pure logic; and that the laws of these fruitful methods of reasoning are intimately related to all other laws of thought".]

THE BRITISH JOURNAL OF PSYCHOLOGY. Vol. ix., Part 2. **Carveth Read.** 'The mind of the Wizard.' [After a general discussion of the rise and decline of Wizardry, the writer gives a psychological account of essential characteristics of the Wizard: (1) Intelligence; (2) Force of Will; (3) Motives; (4) Costume; (5) Jealousy; (6) Histrionic temperament; (7) Hysteria and Power of Suggestion. The existence of scepticism as to the wizard's art is discussed—and of genuine belief in self on the part of some wizards. The various aids to suggestion and persuasion are treated from a psychological point of view.] **Ernest Jones.** 'The Theory of Symbolism.' [Deals with the origin and development of symbols the true meaning of which may be unconscious and with the distinction between metaphor and symbolism proper. Symbols may be significant chiefly for feeling. The following attributes of true symbols are discussed: (1) representation of unconscious material; (2) a constant meaning, traceable in different fields, *e.g.*, dreams and myths, and among different peoples; (3) non-dependence on individual conditioning factors; (4) linguistic connexions—the word-root often betraying a significance now lost in the word itself, but present as subconscious symbolism; (5) phylo-genetic parallels. The primitive or childish tendency to identify very different objects is attributed to three factors: (1) incapacity for discrimination; (2) the pleasure-pain principle (apperception being guided by interest), and (3) the reality principle. Only what is repressed is symbolised, or needs to be symbolised. A critical account of Silberer's treatment follows. The author would confine the term symbolism to cases where there is "affective inhibition" in reference to the thing symbolised.] **Maurice Nicoll.** 'Why is the "unconscious" unconscious?' [The unconscious is the residue not only of the personal experience but of that of the race, including its animal ancestry, and it is unconscious because it is not yet fully adapted to reality; for the healthy conscious mind requires to be closely adapted to reality if the individual is to be successful.] **W. H. R. Rivers.** 'Why is the "unconscious" unconscious.' [As the retention in consciousness of experience as a caterpillar would be worse than useless to the butterfly, so would be the retention in consciousness of infantile experiences to an adult. The unconscious is thus dissociated because it is no longer adapted to reality and so is useless to the individual The unconscious is closely allied to the realm of instinct while consciousness is closely allied to the realm of intelligence.] **Ernest Jones.** 'Why is the "unconscious" unconscious?' [The unconscious is sometimes better adapted to reality than is the conscious and sometimes worse, but the question is not crucial. Sometimes repression of memories is more harmful than would be their retention. Affective tone is the real reason for repression. The pleasant to the unconscious is displeasing to the conscious. Repression is not solely due to individual training, but is often due to inhibiting forces inherited as a result of experience and selection of preceding generations.]

ARCHIV F. D. GES. PSYCHOLOGIE. Bd. xxxv., Heft 2, bis 4. **O. Kutzner.** 'Kritische und experimentelle Beiträge zur Psychologie des Lessens mit besonderer Berücksichtigung des Problems der Gestaltqualität.' [Critique of tachistoscopic experiments in their bearing on the controversy concerning literal reading and reading by form of combination. New experiments (1) by a combined distance and tachistoscopic procedure, with words and meaningless syllables, and (2) under the conditions of ordinary reading, with meaningful and meaningless texts, majuscule and minuscule script, series of letters, meaningless syllables, substantives, etc., point

alike to the determining influence of form of combination.] **S. Grundland.** 'Reaktionsversuche am Feder-Ergographen: Eine experimentelle Untersuchung.' [Experiments on the simple reaction with the spring ergograph, under five sets of instructions (simple or natural reaction, sensory, motor, extreme motor, muscular), yielded nearly forty types, varying with the attitude of the reactors. Aside from the characterisation of these types, the main result is that Lange's distinction between sensory and motor reaction depends not upon simple direction of attention but rather upon the activity or passivity of the fore-period, *i.e.*, upon the degree of peripheral preparedness. On the objective side there is no simple relation between height and duration of movement and time of reaction, although certain uniformities of correlation may be made out.] **E. Achenbach.** 'Experimental studie über Abstraktion und Begriffsbildung.' [Critique of Grünbaum, and report of new experiments on the positive abstraction of form by an improved procedure. Elaborate characterisation of the (five) different attitudes adopted by the observers. Of the three variables, position, magnitude, colour, position offers the greatest hindrance to abstraction. Two main tendencies are at work: a tendency to provide oneself with ideas of wide associative range, and a tendency toward determinate adaptation; the former explains positive, the latter negative abstraction.] Bd. xxxvi., Heft 1. **O. Sterzinger.** 'Rhythmische und ästhetische Charakteristik der musikalischen Sukzessivintervalle und ihre ursächlichen Zusammenhänge.' [Continued from vol. 35. Judgments of the definiteness (*Ausgeprägtheit*) and æsthetic value of the intervals fall into two groups, paralleling the quantifying moment of tonal volume and the accentuating moment of tonal distance. The bases of judgment are (except for the interval of the second) the same as for simultaneous intervals. The 'form' of the interval depends on the character of the higher single tone, distance and consonance. Rythmical definiteness and æsthetic value must be referred to common causes (attention).] **V. Benussi.** 'Versuche zur Analyse taktil erweckter Scheinbewegungen (kinematohaptischer Erscheinungen) nach ihren äusseren Bedingungen und ihren Beziehungen zu den parallelen optischen Phänomenen.' [First part (technique, facts of observation) of a systematic study. There are no pure or objectless experiences of movement (Wertheimer), though there are very clear experiences of a very obscure 'something'. The most important temporal condition is total time (time between applications of stimuli) over interval (time between stimuli). The magnitude of the illusory movement is practically unlimited; it is a function of spatial separation of stimuli and total time. Reversal of direction of movement depends on the group-apprehension of the stimuli.] **R. Pettow.** 'Zur Psychologie der Transvestie, iii. Zugleich ein Beitrag zur Reform des § 51 St. G. B.' [Police-records of the adoption by men of women's clothing, mainly for criminal purposes. The ultimate motive is the yearning for the unknown and unconventional (Wolzogen); sexual and social conditions play a secondary part.] Bd. xxxvi, Heft 2, u. 3. **W. Mueller.** 'Das Verhältnis der Definitionen zu den Axiomen in der neueren Mathematik.' [A strictly formal study. Expository mathematics needs definitions of concepts, in order to name the objects of its own construction. Investigatory mathematics needs definitions of objects, and the axioms are simply constituents of these fundamental definitions.] **L. Rangette.** 'Untersuchung über die Psychologie des wissenschaftlichen Denkens auf experimenteller Grundlage: I. Die elementaren Inhalte der Denkprozesse.' [Analysis of reproductive, productive and critical thought by the method of questions in the spheres of philosophy, history, mathematics and *Germanistik*. The elementary contents are ideas, schemata, localisations (palpable) and thoughts (impalpable

elements). In the concrete process these elements are very variously interrelated; thought, however, takes always the most economical road from the palpable to the impalpable. The author suggests that, in the teaching of science, the logical explication of the subject-matter might usefully be supplemented by an account of the 'psychological basis' of the teacher's individual thinking.] **M. Nachmansohn.** 'Zur Erklärung der durch Inspiration entstandenen Bewusstseinserlebnisse.' [Consciousness may be represented by three zones. At the centre lies apperceptive consciousness (Wundt's point and field of regard); about this extends hidden or withdrawn consciousness (*Binnenbewusstsein*) in two divisions, the zone of pre-consciousness, capable of apperception, and the zone of Freud's unconsciousness, incapable of apperception. Inspiration then means a variously motived and conditioned irruption of the hidden consciousness into the apperceptive centre, with or without motor discharge. Böhme affords an illustration.] **P. Feldkeller.** 'Ueber Begriffsüberschiebungen.' [Transfer of meaning is due only in small part to spread of feeling. It depends in general upon errors inevitable in the hurry of speech: association and its feelings guarantee correct words and word-forms, but the speaker's thought is on the object of discourse and not on syntax. The mistakes are likely to persist in the language, since they have the advantages of brevity, novelty and expressiveness.] **M. A. Goerrig.** 'Ueber den Einfluss der Zeitdauer auf die Grössenschätzung von Armbewegungen.' [Experiments on the *DL* of duration and velocity, on the comparison of short movements (active and passive, about 6 cm.), on that of longer movements in spatial juxtaposition (active and passive), and on that of long movements with spatial interval (active and passive), prove that estimation of extent does not depend directly upon apprehension of time: in all cases the influence of duration is slight, and disappears with practice. In long movements, that extent is usually overestimated which is traversed with the higher degree of muscular contraction; with extended practice this influence also disappears.] Bd. xxxvi., Heft 4. **A. Hertz.** 'Ein Beitrag zur Entwicklung der Schrift.' [The origination of writing demands a fairly high civilisation (Mexico, Egypt), familiar with pictorial representation. Its symbols are then for some time mixedly sentential, verbal and syllabic; and they have a place in later pictorial representation. Where these conditions and mications fail, the writing (Sumerian) is borrowed.] **H. G. Steinmann.** 'Zur systematischen Stellung der Phänomenologie.' [Critique and appreciation of Husserl's *Ideen*, following in general the lines laid down by Messer and Külpe. Phenomenology is closely allied to descriptive psychology, and has its share (with mathematics) in formal logic. Although its range is less than that claimed by Husserl, it has its distinctive sphere, problems, and methods.] **A. A. Gruenbaum.** 'Untersuchungen über die Funktionen des Denkens und des Gedächtnisses: I. Psychologische Natur der Beziehungserlebnisse.' [Materially or contentwise relations are concrete or categorical; formally or dynamically they are intention or fulfilment. We thus have four modes of relational experience. The categorical intention is (in the technical sense) a content; the concrete intention is a dependent or founded content. The categorical foundation (*Stiftung*) is not content, but functional characteristic of content; it is the psychically experienceable form of the co-ordination of the contents of a given moment; the concrete foundation is purely dynamical, and lacks all orientation towards an object.] **Schuetz und Wittmann.** 'Zur quantitativen Auswertung der Ergogramme.' [Instrumental analysis of the curves shows that it is not permissible to consider the individual heights of lift as comparable; the rhythm of work is irregular, and the time in which the work is done is variable.] Bd. xxxvii., Heft 1. **T. Haering.** 'Beiträge zur Wertpsychologie, insbesondere zum Begriff

der logischen oder Erkenntniswertung.' [Reply to criticisms of Messer and Kraus, and expansion of points made in the writer's earlier papers, vols. xxvi. and xxvii. part i., on the definition of logical or cognitive evaluation, deals in particular with reality and objectivity as further modes of the predication of cognitive value. Part ii., on the general psychology of value, discriminates the genetic and the phenomenological problems and (within this distinction) the intellectual and affective types of value-experiences and the various value-dispositions; discusses the explicit and the implicit forms of evaluation; repeats the denial that values are 'made' or psychologically 'brought into being'; and outlines the principles of a classification of values.] **A. A. Gruenbaum.** 'Untersuchungen über die Funktionen des Denkens und des Gedächtnisses. ii. Erscheinungsweisen des Bewusstseins (besonders der Beziehungen).' [The degrees of clearness of the apperceptive school have no application whatsoever to the consciousness of relation. Westphal's 'levels of consciousness,' on the other hand, lead us to the important distinction between levels of object-formation in the sphere of functions of apprehension and modes of object-structure in the sphere of the correlative functions. The attempt to apply the concept of levels to the functions themselves leaves us with mere analogies to the levels of contents. As to the consciousness of relation, it follows that the two intentions show the levels of formation in the strict sense; the two foundations only in the sense of the analogy and with all consequent limitations.] Bd. xxxvii., Heft 2 und 3. **A. Storch.** 'Zur Psychologie und Pathologie des Selbstwerterlebens.' [Our habitual self-estimation is confident or uncertain, according as the individual experiences on which it rests are direct or comparative. Other types may be distinguished on the ground of motivation: the spontaneous, which takes its cue from our own behaviour, and the receptive, which relies on the attitude of others. The receptive type borders on the pathological.] **M. Binnefeld.** 'Experimentelle Untersuchungen über die Bedeutung der Bewegungsempfindungen des Auges bei Vergleichung von Streckengrössen im Hellen und im Dunkeln.' [Review of previous work and theory; experiments on linear and punctual distances, under various conditions, in light and dark surroundings. In the dark, the estimates are based exclusively upon eye-movements and their sensations. In the light (especially with punctual distances) they are often based upon these movements and sensations. Control experiments in the dark, with exposures of 100 σ, and with consequent elimination of eye-movement, gave an average value for the measure of the differential sensitivity identical with that found in the daylight experiments.] **V. Benussi.** 'Ueber Scheinbewegungskombination: Lissajoussche *S*, *M*, und *E* Scheinbewegungsfiguren.' [Experiments, for the most part stroboscopic, on four complex types of illusory movement: a counter-movement (*S*), dependent on illusory positions due to inadequate experiences of form; a concomitant movement (*M*), depending on the presence of an illusory movement-field; a deflected movement (*E*), appearing when an illusory movement traverses the field of a second illusory movement; and a movement (*A*) dependent on the 'attraction' of neighbouring objects. The attitude of the observer, synthetic or analytic, is throughout of moment for the appearance or failure of the particular illusion.] **S. Kovacs.** 'Ueber das Verhältnis des erkennenden und mitteilenden Gedächtnisses auf musikalischem Gebiet.' [Experiments with meaningful and meaningless musical phrases. Recognitive memory implies a passive attitude and synthetic attention; communicative memory, an active attitude and analytic attention. The two modes of memory often employ different sets of ideas; they are usually unequally developed; and either may appear in the absence of

the other. Practical conclusions (teaching, testimony) are drawn from these results.] **Krass.** 'Ueber eine neue Tasttäuschung.' [Rubber-like feel of the lower end of a pencil pressed and moved upon the finger-tip.] Bd. xxxvii., Heft 4. **W. Moog.** 'Die Kritik des Psychologismus durch die moderne Logik und Erkenntnistheorie.' [Exposition and examination of the arguments against psychologism (in its very various forms) urged by Husserl; by Husserl's opponents (Erdmann, Sigwart, Meinong, Brentano, Lipps); by the transcendental schools (Ewald, Natorp, Windelband, Rickert); and by Nelson, Rehmke, Wundt. The upshot is that logic and epistemology must be kept clear of psychological intermixture, overt or covert, direct or indirect; but that it is foolish on this account to overlook relations and so to fail of mutual assistance.] **O. Sterzinger.** 'Die Bestandstücke des poetischen Bildes unter dem Gesichtspunkte seiner Schöpfung.' [Experiments on the creation of poetic images. Every such image involves the connexion of two psychical formations, usually of perception and idea of the same sense-department, though at least twenty different combinations are attested. The work of association takes place in the unconscious; and the common element itself is either unconscious or attains only the lowest of Westphal's levels of consciousness.] **Krass.** 'Eine neue Tasttäuschung.' [If with eyes closed the finger is rubbed around the outer rim of a glass, the circle appears exaggerated; if around the inner edge, the circle appears small.] **J. Kollarits.** 'Ueber eine taktile und akustische Täuschung.' [A spiked ferrule that has worked loose at the end of a walking stick gives the impression, to touch and hearing, of a hollow rod containing a loose metal tongue (sword-stick). The illusion is assimilative.]

VIII.—NOTES.

MIND ASSOCIATION.

The Meeting of the Mind Association will be held this year on Friday, 24th September, at 5 p.m., in Magdalen College, Oxford.

CONGRESS OF PHILOSOPHY.

Oxford, 24th-27th September, 1920.

Preliminary Notice.

The following Societies will take part in the Congress:—

The American Philosophical Association.
The Aristotelian Society.
The British Psychological Society.
The Mind Association.
The Oxford University Philosophical Society.
The Société Française de Philosophie.

The prospective arrangements (subject to alteration) are:—

Friday, 24th September.—Opening Address by M. Henri Bergson on the subject, "Création ou le Nouveau," to be followed by discussion. Lord Haldane will preside.

Saturday, 25th September.—A Symposium on "The Philosophical Aspect of the General Theory of Relativity," by Prof. Pierre Langevin, Prof. F. A. Lindemann, Mr. W. D. Ross, and Dr. C. D. Broad.

A Symposium on "Does Thinking consist merely in Language Processes?" by Miss E. M. Smith and Mr. F. C. Bartlett, Dr. G. H. Thomson, Prof. T. H. Pear, Prof. John B. Watson, and Prof. A. Robinson.

A Paper for discussion on "Disorders of Symbolic Thinking due to Local Lesions of the Brain," by Dr. Henry Head, and a Paper in reply by Dr. R. Mourgue.

An Address by M. Émile Boutroux, "L'usage de l'intelligence la plus propre à nous faire connaître la Nature," to be followed by discussion.

Sunday, 26th September.—A Special Service in the Cathedral, with sermon by the Very Rev. T. B. Strong, Dean of Christ Church.

A Symposium on "The Relation of Religion and Ethics," by Prof. Édouard Le Roy, Prof. J. A. Smith, Principal L. P. Jacks, and Baron F. von Hügel. M. Belot, Prof. Bouglé, Prof. Chevalier, of the University of Lyons, and Prof. Gilson, and Prof. Vermeil, of the University of Strasbourg, will take part in the discussion.

A Symposium on "Mind and Medium in Art," by Mr. C. Marriott, Mr. A. B. Walkley, Prof. H. J. Watt, Mr. E. Bullough, and Mr. C. W. Valentine.

Monday, 27th September.—A Symposium on "The Meaning of 'Meaning,'" by Dr. F. C. S. Schiller, Hon. Bertrand Russell, and Prof. Harold H. Joachim.

A Symposium on "Is the Existence of the Platonic Εἶδος Presupposed in the Analysis of Reality?" by Mr. C. E. M. Joad, Prof. R. F. A. Hoernlé, Miss L. S. Stebbing, and Mr. A. D. Lindsay.

A Symposium on "The Function of Nationality," by M. Marcel Mauss, Prof. Elie Halévy, Prof. Théodore Ruyssen, M. René Johannet, Sir Frederick Pollock, and Prof. Gilbert Murray.

The Session will be open to Members of the constituent Societies and visitors introduced by them. There will be a subscription of 15s. to meet the cost of printing and distributing the Papers. Symposium Papers will be taken as read, and the Authors will open the general discussion. Members of the Societies unable to attend the Session and desiring to receive the Papers can obtain them by paying the subscription.

The Papers will be subsequently published in the Aristotelian Society *Proceedings*, the *British Journal of Psychology*, MIND, and the *Hibbert Journal*.

Accommodation during the Session will be offered to Members by the following Colleges: Balliol, Corpus Christi, Magdalen, New College, and (for ladies) St. Hugh's. Other Colleges offering accommodation will be announced later.

The charge is expected to be on the scale of Bedroom, Breakfast, and Lunch per day, 7s. 6d.; Dinner, 2s. 6d.

The Meetings will be held in a College Hall.

Mr. A. H. Smith, New College, Oxford, will act as Honorary Secretary for all matters which concern the local arrangements, and will receive subscriptions and applications.

Communications in regard to Papers and Symposia should be addressed to Prof. H. Wildon Carr, 107 Church Street, Chelsea, London, S.W. 3.

New Series. No. 116.] [October, 1920.

385

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—THE MEANING OF 'MEANING'.

A Symposium by F. C. S. Schiller, B. Russell and H. H. Joachim.

I. By F. C. S. Schiller.

It has fallen to me to carry on the discussion so brilliantly started by Mr. Russell last year. As he very truly remarked,[1] "logicians have done very little towards explaining the relation called 'meaning'," though this seems a poor reason for relegating it to psychology, where there is little likelihood of getting its paramount importance for logic noticed, even if its own traditional prejudices allowed an adequate description to be given of the psychic character of meaning.

The reason, however, for this neglect of meaning will probably become obvious if we cast a glance over what has hitherto been the chief inspiration of 'logic,' *viz.*, the structure of language, and consider how the chief instruments of philosophic thought have endeavoured to express the notion of meaning. Greek, we then find, is so defective that it can hardly be said to have a vocabulary for the notion at all: it has to rely entirely on periphrases, and gets no nearer to saying 'it means nothing' than declaring that 'it *says* nothing'. Latin is a little better; it has coined the notions of '*significance*' and '*sense*' as aids to the expression of the missing word, and passes them on to the languages descended from, or influenced by, itself. But '*significatio*' is clearly a late and learned word for a special *intensity* of meaning, while '*sensus*' is a manifest misnomer. Meaning belongs to a much higher level of mental development than

[1] *On Propositions: What they are and how they Mean*, p. 7.

sense-perception. Latin notices also the volitional factor in meaning by employing periphrases with *volo* and *valeo*, and these, too, have had a prosperous career.[1] It is only in the Teutonic languages that a specific, antique, and genuinely native vocabulary is found for the notion of 'meaning'. The root 'mean' appears to be common to all of them. In German, however, it has suffered serious degeneration. 'Meinung' has become 'opinion,' though 'meinen' may still, in a context, translate 'mean'.[2] The result is that German is nearly as badly off as the Latin tongues in expressing 'meaning'. 'Bedeutung' is 'significance' or 'interpretation' rather than meaning; 'unmeaning' is 'sinnlos,' 'what does that mean?' is 'was soll das *heissen?*' or '*besagen*,' *i.e.*, properly 'what is it *to be called?* or to '*declare*'. It would seem then that 'meaning' usually baffles language: English alone has a full and specific vocabulary for it, as for the similarly important notion of 'relevance'.[3] Is it not manifestly fitting, therefore, that its significance should be discussed in English?

1.

What sort of an 'entity,' then, is this elusive fact of 'Meaning'? We seem at first to have a choice between conceiving it (1) as an intrinsic property inherent in objects, (2) as a relation, (3) as a contribution to reality made by the subject, and each of these ways of treating it may find support in language.

(1) Language certainly assumes that objects possess, or may possess, meaning *per se*. *Words* especially are always supposed to 'have' meaning of their own might, and stubbornly refuse to have their meaning ignored or altered arbitrarily. All dictionaries are dedicated to the service of this belief. Similarly mental imagery is generally supposed to mean. That physical objects should have intrinsic meaning is more metaphysical and disputable, because it implies an objective teleology. Still it has been extensively assumed. For it shocks the philosophic mind to contemplate objects which are meaningless. Nevertheless Mr. Russell assures us[4] that "sensations do not mean," though images often do. Mr. Russell is not as 'tender-minded' as an academic philosopher should be. He even ventures upon a sagaciously pragmatic suggestion which threatens to upset the whole

[1] The French 'qu'est ce que ça *veut dire?*' is typical.
[2] *E.g.*, 'Was meint er damit?'
[3] *Cf.* MIND, No. 82.
[4] *L.c.*, p. 27.

belief in the intrinsic meaning of objects. Even of words he is willing to affirm that "the meaning is only to be discovered by observing its use: the use *comes first*, and the meaning is distilled out of it".[1] If that is true of meanings so plain and so completely catalogued as those of words, may not *all* meanings be secondary? May not all objects be meaningless *per se*, until they are used to *convey* meaning, and meanings attach themselves to them as barnacles to a ship's bottom?

(2) If meaning is thus an acquired character of objects, it will have to be considered seriously whether it is not a relation, and if so, of what kind. We may note that Mr. Russell does not hesitate to assume that it *is* a relation.[2] But we naturally ask 'A relation between what?' This question Mr. Russell does not find it quite easy to answer. He tries (p. 24) to conceive meaning as a relation between an object and an image, but has to admit that "meaning is to some extent subject to the will". Now this admission is significant: for 'will' is, of course, the very devil in the eyes of any intellectualist philosophy. It keeps breaking in and breaking up the fine-spun fictions of analytical acumen. The intellectualist tradition simply *will* not recognise its existence, but cannot exorcise it, because it has no other way of disposing of the whole side of reality from which its *method* has made abstraction. 'Will' is simply the collective name for the chaotic forces that are left out of account, and so menace the stability of cosmic structures, and the policy of clinging to them.

Historically the matter may be put briefly thus. The traditional method of philosophy, in psychology as well as in logic, goes back to Plato. Now Plato reveals himself in his writings as a powerful and vivid *visualizer*, who naturally thought, therefore, that reality existed to be *contemplated*. Subsequent philosophy readily accepted a dogma that accorded well with the natural shrinking from introspection; it set itself to contemplate, and to look upon everything as an object of contemplation—*from without*. Whatever could not be so regarded, was undervalued, or denied altogether. This is why acts, agents, activities, assumptions, and attitudes are necessarily absent from the panorama of the philosophic spectator of all existence. They are not *objects of contemplation*, and cannot be seen by one whose ambition is to be merely a *spectator*. To exist for such a one, everything has to be transmuted into an *observable* object. But does nothing else exist? Surely no contention can be more gratuitous

[1] MIND, No. 82, p. 19. Italics mine. [2] *Ibid.*, pp. 7, 19.

N.S. 21, 1911

and grotesque. Surely when the observer argues thus, he has forgotten *himself*, and overlooked the all-pervasive realities which condition all objects and form, as it were, the atmosphere which renders them visible and the light which illumines them.

Nor is there any real reason why they should be ignored. Our method of interpretation can just as well, and as legitimately, proceed *from within* outwards. 'Introspection' is possible, though the word is sadly tainted with the delusion that, to be known, the interior of the soul must be 'regarded' as 'consisting' of 'objects' to be viewed externally. Whereas *as experienced from within* 'objects' are by no means the substantial core of reality, but rather secondary, derivative and instrumental; they are the burden of a swirling tide of life, the products of an arduous activity of selective recognition, the values, means and ends achieved by purposive striving. True, no psychologists, not even those who have struggled most sturdily against the contemplative tradition and insisted on the activity and continuity of mental life,[1] have quite emancipated themselves from the method of turning the eye of the soul outwards; but it has failed so long and so egregiously that it ought to be discarded.

Mr. Russell has provided the last exemplification of this failure. He has loyally tried to account for the facts in the traditional way, and has failed as decisively as Hume and Mill. In order to comply with the imperious postulate that nothing shall be treated as real that cannot be regarded as an observable object, he has even consented to change his own doctrine. "I have to confess," he says (p. 25), "that the theory which analyses a presentation into act and object no longer satisfies me. The act or subject is schematically convenient, but not empirically *discoverable*.[2] . . . I am at a loss to discover any actual *phenomenon*[2] which could be called an 'act' and could be *regarded*[2] as a *constituent*[2] of a presentation." And he encounters the *mauvais pas* of the method

[1] Thus even James tries to reduce the self to strain-sensations (*i.e.*, 'objects'), relegates meaning to the 'psychic fringe,' and in the very act of recognising it as "an entirely peculiar element of thought" and an "absolutely positive sort of feeling" represents it as "evanescent and transitive" (*Princ. of Psych.*, I., 472), and so gives the lie to the plain fact that meaning is far more persistent in experience than the objects meant. Similarly McDougall, though he calls meaning "the essential part of consciousness," accuses it of 'eluding introspection' and represents it as supervening upon "sensory content," *i.e.*, objects which meant nothing till it came (*Body and Mind*, p. 303). Surely this inverts the real relation: inert 'objects' are selected and swept up by a current of meaning which is exploring reality for means to its ends.

[2] Italics mine.

(which has hitherto led to the confession of failure) that if the mind is conceived as a series of feelings we must accept "the paradox that something which *ex hypothesi* is but a series of feelings can be aware of itself as a series,"[1] with the heroic declaration that "the belief in a succession may quite well be itself a succession" (p. 42). If nevertheless he is driven to admit a volitional factor in meaning, and to add to the 'contents' of propositions "propositional attitudes" which "do not form part of the proposition, *i.e.*, of the content" (p. 30), we may be sure that he is yielding to the sheer pressure of the facts: the more so when we notice that his examples of "propositional attitudes," memory, expectation and desire, are precisely the terms by which his predecessors sought to atone for their destruction of all the principles that could be conceived to weld together the serial succession of 'contents' into the biography of a continuous spirit.[2] But memory, expectation and desire are facts to which the method common to Hume, Mill and Russell has no right to appeal: they are activities which unite and fuse into significant wholes the fictitious series of 'sensations,' 'images' and other 'objects,' inconsistently and inexplicably 'connected' by static 'relations'. Their constant recurrence, therefore, in this psychological 'analysis' is as much a confession of failure as is the recognition of 'propositional attitudes' or of contributions to 'meaning' rooted in the 'will'.

(3) We are driven then to consider a third alternative. What if Meaning be neither an inherent property of objects nor a static 'relation' between objects at all, not even between the object and a subject, but essentially an *activity* or *attitude* taken up towards objects by a subject and energetically projected into them like an *a* particle, until they, too, grow active and begin to radiate with 'meaning'? Here, if anywhere, would seem to lie the clue to the mystery of 'meaning'.

To inquire thus means a fundamental change in the method of psychological analysis. It means the substitution of the standpoint of the *agent* for that of the *spectator*. It means voluntarism, instead of intellectualism. But abstractly it is as possible and as valid a method as the other, and we have good reason to anticipate that it will prove more potent and more applicable to the facts.

[1] *Examination of Hamilton*, p. 248.

[2] *Cf.* Hume's *Treatise* (ed. Selby-Bigge), pp. 260 f., 636; Mill's *Hamilton*, pp. 247, 260, 262.

2.

Accordingly such proves to be the case. When we suspend our intellectualistic bias, the facts of meaning at once yield overwhelming evidence in favour of the voluntarist interpretation. If 'meaning' is originally a demand *we* make upon our experience, we can, in the first place, account excellently for the all-pervasiveness of Meaning. For we shall then insist that whatever our attention lights upon *shall have* a meaning, and shall forever be inquiring *what* its meaning is.

Hence (1) the assumption of meaning is practically universal. An *unmeaning* flow of experiences is surely the rarest and most unheard-of of events in a normal mind. If we can be said to experience anything that we do *not* take to have a meaning, it is to be found only in the phantasmagoria of some dreams: and even towards dreams the psychoanalysts have shown that science cannot now maintain an ascetic attitude. The common man has never been willing to believe that anything that happened to him could be void of meaning. He is frankly a Nebuchadnezzar, who wants to have even his forgotten dreams interpreted: unfortunately the psychologists have tended to pass the problem of Meaning on to the logicians, and these do not show themselves to be Daniels when they come to Judgment and endeavour to expound the meaning of that (or any other) logical structure.

(2) Meaning, then, is not only universally present, but universally decisive, not only real, but really important. It is not an insignificant accessory to a substantive process of objective change. It is vital and central and all-sustaining. It is the source of the energy which animates and directs the whole process, selects the objects of attention, determines their function and value. All this becomes evident the moment our psychology consents to leave the attitude of the spectator for that of the agent, or to reflect that even the former presupposed an *act* which assumed it. It then appears that there is no reason whatever to be apologetic about meaning, to minimise its importance, to exaggerate the difficulty of discerning it, to drive it into the background, to relegate it to the psychic 'fringe,' to try to curry favour with the advocates of a radically different method of psychological description by disparaging it as 'vague,' 'obscure' or 'evanescent'. The meaning he intends is usually what an agent is most clearly conscious of, and what persists most stubbornly, through the various forms of expression he may successively attempt. It is true that meaning is essentially

progressive; it promptly ebbs from the various instruments it has utilised for its expression, when they have served their purpose; but it is not true that meaning itself is transitory. It passes lightly on, from one object to another, but it remains a permanent reality of which the subject, *conceived as active*, can never grow oblivious. In Hume's language, therefore, Meaning forms the true 'theatre' of mental operations, the stage on which the various sorts of 'objects' make their brief appearances and play their little parts.

(3) The view of Meaning I have advocated may be summed up in the phrase that *Meaning is essentially personal;* and so it must cause endless trouble to a logic or a psychology built on the assumption that it is *de rigueur* to abstract from personality. What anything means depends on *who* means it, when, where, why, on what occasion, in what context, with what purpose, with what success. A real meaning is as surely rooted in a definite spot in an individual soul as any flower in its bed. It is as particular as any fact can be, and cannot be transplanted to another situation without the risk of a fatal loss or change of meaning. Hence it is incumbent on every one who concerns himself with meaning to beware of stopping short at the conventional meaning of the words and to press on to the meaning of the man who uses them.

(4) This, moreover, he can always do. For a question of Meaning is always a question of fact, as is the question of its communication or understanding. Thus the meaning of any doctrine can always be ascertained (in principle), if we can communicate with its maker and understand what *he* meant. For this is the historic fact which started the development of his doctrine. It is the duty of philosophers then to ascertain this primary fact, the personal meaning, *as it was meant;* after that they may proceed to assimilate and 'understand' it. For it is sometimes possible to communicate meaning, though it must be confessed that philosophers are not very expert in exploiting this possibility.

It should be noted further that to declare that meaning is personal is to imply that it is relative to the *whole* personality, and is not a purely intellectual affair. It is deplorable, but true, that intellectual considerations count for very little in the total reactions of the great majority—even of those who believe themselves to be following the light of reason; nor is any of the artificial simplifications to which the sciences initially have recourse more productive of confusion and contention than the facile assumption that when two persons *say* the same things they must also *mean* the same things.

They usually *don't*, as appears when they make a real effort to understand each other. Hence it is the rule rather than the exception that the same 'proposition' should have very different meanings in the context of two minds with different temperaments, histories and prejudices, and vast masses of perfectly futile controversy would be cleared away if more attention were paid to the idiosyncrasies of the parties concerned and to the natural difficulties in the way of an effective communication of meaning.

3.

From this account of what Meaning is, it follows that it is *not* quite a number of things it has usually been supposed to be. Thus, if the whole course of experience is full of meaning *a priori*, that is simply because *we assume* that it means, it follows that the meaning of the objects occurring in it cannot be inherent, but must be derivative. For being bathed in a flood of personal meaning, they gradually get stained with a stable colouring, which is determined by the uses to which they have been put and the idiosyncrasy of the user. From this fate there is no escape either for words, mental images or objects; but it will be convenient to consider these cases separately. In each case it will be found that though they tend to acquire stable meaning in consequence of habitual use, it is not possible to fix this meaning absolutely and irrespective of their use. There always remains a margin of elasticity about it which shows that it is false in principle to treat the meaning in abstraction from the use, and the use in abstraction from the *particular occasion* of the use.

(1) That *words* have stable meanings demanding scientific recognition is sufficiently attested by the existence of *dictionaries*, which are catalogues of the meanings on record. At the same time the fact that dictionaries also grow antiquated proves that the meanings of words continue to grow in spite of them. Actually no word can have its meaning so fixed, whether by a dictionary or by a definition, that it cannot work loose. So though the discoverers of new truths and the makers of new values often have reason to complain of the stubborn conservatism of words, the corruptors of language, from the ignoramus to the humourist, triumph easily over the fixity of their meanings. An analogy, a metaphor, a sarcasm, a joke, or even a blunder, will easily do the trick.[1]

[1] Thus logicians might be invited to take note that 'I don't think' has become an emphatic form of affirmation, and that in American to 'hypothecate' means 'to frame hypotheses,' and no longer to 'pawn,' and so fills a lacuna in English.

Thus whether we use words as counters or as coins, we are always confronted with problems of change and of exchange.

(2) Mental images undoubtedly occur, and carry meaning. But, as Mr. Russell is careful to note, they are usually so vague that they can easily accommodate themselves to almost any meaning. A mental image, though it is in itself a particular psychic fact, can stand for, and mean, either a particular object, or a 'universal,' or any number of objects other than that of which it is 'the' meaning. When Prof. Santayana lately wrote about 'German philosophy,' he no doubt had his colleague Münsterberg in mind; but his image might just as easily have called up not 'German philosophy' universally, but another of the tribe; or he might have summoned a more inhuman image to typify his topic. The mental image of a dignified old man may mean a friend or a god, and among gods may stand for Jahveh or Jupiter, for Ormuzd or Odin, *au choix*. Mental images then are very obliging; you can mean with them pretty nearly what you like. Which no doubt is one reason why we are so ready to employ them.

There is one thing, however, which it is impossible, or at least improper, to do with them. We cannot make them pivotal from our theory of Meaning. Yet this is the very thing which has usually been attempted. It has been supposed that mental images could possess inherent meanings, and that by associating and compounding these, more or less mechanically, the meanings of judgments could be explained. Or, as Mr. Russell puts it, that "the 'meaning' of images is the simplest kind of meaning because images resemble what they mean, whereas words, as a rule, do not," that "thus the problem of the meaning of words is reduced to the problem of the meaning of images" (p. 22), and that "sensations and images, suitably related," are "a sufficient stuff out of which to compose beliefs" (p. 28).

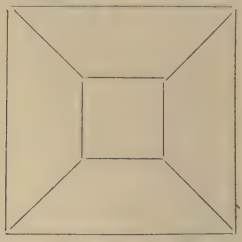
Now this is an assumption I am anxious to challenge. There seems to be no justification for it whatever, and much that tells against it. It is merely a deduction from the theory that objects alone, and no acts, may be recognised by psychology, and all the facts to which it appeals decide against it.

It presupposes (1) that all have mental images, because they are essential to meaning and no one can mean without them; yet it is admitted that empirically imagery is indiscoverable in many excellent reasoners, without damage or detriment to their meaning. (2) It incites to the inference that the more vivid the imagery, the clearer the meaning; but no such correlation can be observed. Meaning and imagery do not vary concomitantly, but rather inversely. (3) It would justify

the deduction that the nature of the meaning must be profoundly affected by the nature of the imagery which conveys it; but no such influence can be traced. On the contrary with the same meaning different images may be conjoined, while different meanings may be conveyed by the same image. Actually any kind of meaning is found to be associated with any kind of imagery and no type of imagery appears to have, as such, any advantage over any other. Beyond the fact that meaning and imagery are both frequent occurrences in minds, no logical connexion seems traceable between them.

Does not the evidence, then, point irresistibly to the interpretation that the association of Meaning and imagery is essentially fortuitous, and due, probably, to the irradiation of the dynamic meaning-activity over the mental contents and idiosyncrasies on which it happens to impinge? If so, one would expect the value of the meaning to depend essentially on the intrinsic energy of the meaning-activity and its success in attaining its objects, and to vary independently of the imagery, which, whether present or not, would be irrelevant, and would add nothing indispensable to the meaning. The belief that the imagery is essential is merely a consequence of this false psychological method that refuses to recognise activities which are not 'objects'.

(3) Meaning sits more lightly on objects and stains them less deeply and permanently than images and words. This is established by the fact that it is not uncommon to inquire what an object means, and to prosecute elaborate researches into its unknown meaning. This implies, doubtless, that it 'has' a meaning; but this assumption is only methodological, and it proves also that its meaning is not on the surface, and has to be sought out. At the opposite end of the scale we find objects whose meaning is so plainly imposed on them by us that we can vary it at pleasure, and make the object mean one thing or another, as we will. Thus in this simple diagram



the central square can be seen as flat, as receding or as projecting, as we will. Philosophy is indebted to the psychologists for the discovery of many such cases, though their

importance for knowledge has hardly been appreciated adequately. Between these extremes, of meaning imposed at will and of meaning that is still a matter of faith, there are masses of objects which have more or less inherent and stable meanings. But it is hardly scientific to contemplate these meanings as if they were entirely intrinsic, and had not been attached to the objects by our past dealings with them.

(4) Meaning is not dependent on *expression*. No doubt it normally finds expression by some means or other, or, if it does not, becomes suspect, like the 'pure' science that has *no* applications and so becomes indistinguishable from an arbitrary game, or the well-meaning man who never *does* the good he *means*. The ineffable and inexpressible are rightly suspected of being eulogistic descriptions of the null and void. Still, meaning is the primary fact and expression is secondary. Hence it is possible to have the meaning-experience, to assume the meaning-attitude, *without* using words or any other sort of sign or utterance.

This comes out most clearly perhaps in cases of *obstructed* expression. We are never more purely or intensely conscious of meaning than when we find ourselves totally unable to express our meaning. Who has not felt the agony of trying vainly to express his meaning in a foreign tongue, or to utter an elusive word that hovers on his tongue-tip, but obstinately refuses to pass his ἔρκος ὀδόντων? Not a few also have experienced various stages of aphasia, which stretch from trivial 'slips of the tongue' that fail to express what we meant to total inhibition of all utterance. Or again the primacy of the meaning-experience is attested by the fact that a mind may be full of meaning and yet empty of any object meant. As James says,[1] "What kind of a mental fact is a man's intention of saying a thing before he has said it? It is an entirely definite intention, distinct from all other intentions, an absolutely distinct state of consciousness, therefore; and yet how much of it consists of definite sensorial images? . . . It has a nature of its own of the most positive sort and yet . . . the intention *to-say-so-and-so* is the only name it can receive." Consider again James's description of the 'intensely active gap' that fills consciousness when "we try to recall a forgotten name".[2] It is "no mere gap. . . . A sort of wraith of the name is in it, beckoning us in a given direction, making us at moments tingle with the sense of our closeness, and then letting us sink back without the longed-for term. If wrong names are proposed to us, this singularly

[1] *Psychology*, I., p. 253. [2] *Ibid.*, p. 251.

definite gap acts immediately so as to negate them. They do not fit into its mould. And the gap of one word does not feel like the gap of another, all empty of content as both might seem."

The apparent paradox that meaning should be most intense when it is most obstructed is not unparalleled. Just as the strength of a current is revealed when it eddies over the rocks that obstruct its course, so the reality of our activities is manifested to us by the resistance they encounter. Thus what philosophers are wont to call 'thought' is essentially a phenomenon of obstructed perception, 'will' is an incident of obstructed action, and 'research' of obstructed cognition. It is natural enough, therefore, that cases of obstructed expression should yield the purest and intensest consciousness of meaning.

How independent of expression meaning essentially is, we may realise also when we observe the flexibility of the instruments of expression when they are plunged in the stream of meaning. Words in particular are by no means as resistant as verbalists imagine. They do not maintain their meaning against the disintegrating influences of usage. What creed or formula means now what it meant originally to its maker? That irony or jest, or even ignorance and blundering, can transmute the meaning of a word is theoretically admitted; but how few realise that the least change of emphasis, intonation or context may change its normal meaning utterly. The verbal form of a sentence is hardly a better guide to its meaning in use than the etymology[1] of the words. A look, a nod, a wink, a start may reverse their ostensible meaning and convey the actual meaning better than a volume of words. As Prof. Stout has remarked the meaning of 'I am going home' is utterly different according as it is said by a man in the street or on his death-bed, while the 'Greeks' who are feared are probably different every time *Timeo Danaos* is quoted. Why, then, should logicians be surprised to find that the commonest meaning of 'it is a fine day' is 'let us talk,' and of 'not at home' is 'won't see you,' or that 'it is too sacred' mostly means 'I will not trouble to inquire,' and 'I disbelieve' = 'I have not read'? The control of verbal by personal meaning is surely so plain that we may leave this topic with the expression of an earnest hope that the problem of meaning will not long continue to remain too 'sacred' to be pried into by the logicians.

[1] Which itself is not a 'study of truth,' even though ἔτυμος means 'true'.

There is, however, one more question I should like to bring to the notice of Mr. Russell. It is the intimate connexion between *meaning* and *value*. To attribute meaning and to attribute value seem to be closely akin and almost the same thing. Both are personal attitudes and activities, which in practice seem inseparable, though, theoretically, meaning may perhaps be said to be prior to value and a condition thereof. Both are all-pervasive, *i.e.*, both form atmospheres through which all 'objects' are observed. Both are 'subjective' in origin, *i.e.*, are attitudes expressive of total personality. Both are individual, *i.e.*, the meanings and values a man recognizes are primarily those which appeal to him, and may be peculiar to him. Thus there is always for every one a problem of *communication;* because he never knows initially whether the meanings and values he attributes to objects in the common world are shared, understood or appreciated by others. But whenever communication is achieved and agreement reached, both meanings and values become 'objective,' and may even become cogent and coercive. They then not only grow common and win general recognition, but are projected into objects and regarded as inhering in them. Objects are thereupon said to 'possess' or 'have' value or meaning *per se*, and whether anyone knows or recognizes it or not.

All of which it would of course be possible to illustrate at length; but I will content myself with a single, and to my mind also singular, corollary. If value is taken to be a 'tertiary predicate,' a human addition to reality, which the austere impersonality of science endeavours to erase from the picture of the universe, and if, nevertheless, meaning and value are indissolubly bound up together, will it not follow that in cancelling value we inevitably cancel also meaning? And after this how can we flatter science that it means anything or can discover meaning anywhere? Thus a meaningless logic helplessly contemplating a meaningless reality would seem to be the legitimate outcome of a consistent attempt to abstract from the personality of the knower in our account of knowledge and reality. And to me at least this situation tends strongly to suggest a doubt whether the meaning of such a philosophy can be right.

I trust I have succeeded in attacking Mr. Russell's stimulating paper on a sufficiently wide front to provide abundant sport for the spectators of our philosophical *battues*, and adequate temptations for the intervention of those who are not content to be merely spectators.

II. By Bertrand Russell.

In replying to Dr. Schiller, I am anxious first of all to make clear what are the points as to which I am in agreement with him. I agree with him in not regarding meaning as "an intrinsic property inherent in objects". I agree also that "meaning is essentially personal," though I disagree as to the nature of personality. When Dr. Schiller says: "What anything means depends on *who* means it, when, where, why," etc., he is saying something which must be true if there is truth in the theory of meaning advocated in the paper which he is criticising. It follows equally from that theory that "meaning is not a purely intellectual affair"—provided, at least, that any meaning can be found for the word "intellectual". So far as I can discover, this word means merely "good" or "bad" according to the philosopher who uses it; in Dr. Schiller's mouth, it means "bad". His statement therefore may be translated: "Meaning is not wholly evil"—a proposition with which I find myself in agreement, since I am convinced that Dr. Schiller, at any rate, means *well*.

It is time, however, to pass to points of disagreement. I will begin with what Dr. Schiller says as to the meaning of images [III, (2)]. His arguments against the view that the meaning of words is derived from that of images are three. He says:—

"It presupposes (1) that all have mental images because they are essential to meaning, and no one can mean without them; yet it is admitted that empirically imagery is indiscoverable in many excellent reasoners, without damage or detriment to their meaning."

This objection ignores the history of the individual. The essence of meaning lies in the causal efficacy of that which has meaning, and this causal efficacy is, in the main, a result of habit. A word, through association, acquires the same causal efficacy as an image having the same meaning; habit causes it to have this efficacy directly, without the intermediary of the image. But that does not prove that the image could have been dispensed with originally. Dancing bears dance when they hear a tune which they formerly heard when placed upon an uncomfortably hot floor; but that does not prove that the tune alone can account for their dancing. The tune corresponds to the words, the hot floor to the image; in each case a habit has been formed through the former presence of an intermediate link which is now no longer required.

Dr. Schiller's second argument on this subject is as follows:—

"It incites to the inference that the more vivid the imagery, the clearer the meaning; but no such correlation can be observed. Meaning and imagery do not vary concomitantly, but rather inversely."

I suspect Dr. Schiller, in this argument, of an error which is somewhat unusual with him, namely a preference of abstract verbal precision to vitality and concreteness. Suppose you describe Niagara to two people who have never seen it, one a painter who translates all your words into images, the other a physicist whose thoughts are led by your description to geology and hydro-dynamical formulæ. The above argument commits Dr. Schiller to the view that the physicist has a clearer apprehension of your meaning than the artist; yet this view seems contrary to his whole philosophy. It is, of course, true that words have great advantages over images as bearers of meaning: first, they are more subject to voluntary control; secondly, they are communicable. The second of these is the more important in the present connexion. Precision in the meaning of words, so far as it exists, is a social product, due in the main to the fact that if we use words in a sense different from that in which our hearer understands them we produce effects which we do not desire (except in diplomacy). Thus the greater precision in the meaning of words as compared with images is by no means a proof that they are the more primitive bearers of meaning.

Dr. Schiller's third argument is:—

"It would justify the deduction that the nature of the meaning must be profoundly affected by the nature of the imagery which conveys it; but no such influence can be traced. On the contrary, with the same meaning different images may be conjoined, while different meanings may be conveyed by the same image."

I cannot understand how this can possibly be supposed to be an argument against my position, which, on the contrary, would lead one to expect this result—a result which I myself pointed out (p. 23). If the meaning of an image depends, as I maintain, upon its associations, it is clear that the meaning will be different in different people, or in one person at different times, if, as is to be presumed, the associations of the image are different on the two occasions. Here again, the comparative fixity in the meaning of words as opposed to images is due to their social employment.

I come next to a more fundamental question. Dr. Schiller says: "The belief that the imagery is essential is merely a consequence of the false psychological method that refuses to

recognise activities which are not 'objects'." This is connected with an earlier passage in which he says that 'will' is "the very devil in the eyes of any intellectualist philosophy". He maintains that traditional philosophy errs in regarding everything as an object of contemplation "*from without*," and that "this is why acts, agents, activities, assumptions and attitudes are necessarily absent from the panorama of the philosophic spectator of all existence. They are not *objects of contemplation*, and cannot be seen by one whose ambition is to be merely a *spectator*. To exist for such a one, everything has to be transmuted into an *observable* object. But does nothing else exist? Surely no contention can be more gratuitous and grotesque. Surely when the observer argues thus, he has forgotten *himself*."

This passage raises so many issues that it is difficult to know where to begin. To take small points first: I have not the faintest hostility to the will, and do not by any means regard it as "the devil" (except in those who are devilish). Nor, on the other hand, do I call myself an "intellectualist". I do not know what one should mean by the word "intellect," but I suspect that one should mean certain habits in the use of words. I have no mystical reverence for these habits, or for anything else in Man. I try to use such intellect as I possess when I think, just as I use my legs in walking and my fingers in writing. But the fact that I use my fingers in writing philosophy does not make me a member of some special digitatory school of philosophers. It is perhaps fair to call (say) Hegel an intellectualist, since he believed in an affinity between the cosmic process and the process of thought; but the term can hardly be applied to one who regards thought as merely one among natural processes, and hopes that it may be explained some day in terms of physics.

When Dr. Schiller asks whether it is rational to deny the existence of things that cannot be observed, we must certainly answer that it is irrational. I should be the last to maintain that nothing unobservable exists. And Dr. Schiller would be the first to criticise me for having admitted, in constructing the world of physics, that there *may* be physical particulars which are not experienced. He will postulate only such unobservable entities as he happens to desire; as regards others, he will be rigidly empirical. This is quite consistent with pragmatism: I am merely pointing out that Dr. Schiller's position requires pragmatism to justify it. My own position is more agnostic. I am not prepared either to affirm or to deny the existence of entities which can neither be observed nor inferred from observable ones. When I refuse to assert the

existence of such entities, I emphatically do not mean to deny their existence, but merely to abstain from an opinion either way.

Dr. Schiller maintains, on the contrary, that he knows of the existence of certain entities which cannot be observed or made into objects of contemplation. He knows of "all-pervasive realities which condition all objects and form, as it were, the atmosphere which renders them visible and the light which illumines them". But how can this be? Do not his very words turn them into objects of contemplation? Does not the very mention of them as "all-pervasive realities" place him outside them, at least in imagination, and thus imply that they are not *all*-pervasive? If my personality colours all that I observe—a view which I neither assert nor deny—then, clearly, I cannot know anything of the way in which it colours my objects. A subjectivity which can be put into words is a half-hearted subjectivity; taken seriously, it defeats itself. It becomes ineffable and inexpressible, and, as Dr. Schiller says, "the ineffable and inexpressible are rightly suspected of being eulogistic descriptions of the null and void".

It is much to be regretted that Dr. Schiller has not told us how he acquired knowledge of these unobservable entities, which, according to him, afford the clue to meaning and to everything else. For my part, I do not regard the problem of meaning as one requiring such special methods as are commonly called "philosophical". I believe that there is one method of acquiring knowledge, the method of science; and that all specially "philosophical" methods serve only the purpose of concealing ignorance. In science, we are confined to the entities we can observe, not on any *a priori* ground, nor because we hold that there are no other entities, but merely because the others, if any, are by definition unknown. Now meaning is an observable property of observable entities, and must be amenable to scientific treatment. My object has been to endeavour to construct a theory of meaning after the model of scientific theories, not on the lines of traditional philosophy. It is this, at bottom, that causes the divergence between Dr. Schiller's views and mine.

All the words in which Dr. Schiller endeavours to describe his unobservable entities imply that after all he can observe them. "*As experienced from within*," he says, "'objects' are by no means the substantial core of reality, but rather secondary, derivative and instrumental, the burden of a swirling tide of life, the product of an arduous activity of selective recognition, the values, means and ends achieved

by purposive striving." Why not? But that only means that Dr. Schiller substitutes new objects for the old ones: the swirling tide of life, arduous activity, purposive striving, replace tables and chairs. I should be the last to maintain that tables and chairs are part of the "substantial core of reality," a view which is the opposite of my own. I have my doubts also about the "swirling tide of life," since I should wish to know what it is that swirls, and whether the equations of hydrodynamics can be applied But that is not my point. My point is that Dr. Schiller makes these things into objects, and seems to me, like Herbert Spencer, to know more than he should about the Unknowable.

It is true that he speaks of these things as "experienced from within". The word "experienced" is a blessed word, calculated to create a smoke-screen about any position. But I confess I am at a loss to know how anything can be experienced without being an object, or, if it can, how it can come to be mentioned. I am also much puzzled by the words "within" and "without". I understand the words, when physics and space have been constructed, as applying to what is within or without my skin. I perfectly understand that when I have a stomach-ache it is "experienced from within," whereas when my hat blows off it is "experienced from without". But I do not understand any other sense of the words, and I do not believe they have any other sense. I believe that the things "experienced from within" are the things that happen inside the skin, and that the words are not capable of any other meaning. I believe that thought and will and purpose and the rest of the apparatus of our "mental" life are reducible to elements which concern my inside in just the same sense in which a stomach-ache does, and in no other.

Dr. Schiller's discussion has emphasised the part played by images in my theory of meaning. But as this is by no means the most vital or characteristic point in my theory, I think it will be wise to state that theory briefly in an uncontroversial way; the more so as the explanation of meaning was only one of the purposes of the paper which Dr. Schiller is criticising.

Meaning, in my view, is a characteristic of "signs," and "signs" are sensible (or imaginal) phenomena which cause actions appropriate, not to themselves, but to something else with which they are associated. The possibility of action with reference to what is not sensibly present is one of the things that might be held to characterise mind. Let us take first a very elementary example. Suppose you are in a

familiar room at night, and suddenly the light goes out, you will be able to find your way to the door without much difficulty by means of the picture of the room which you have in your mind. In this case visual images serve, somewhat imperfectly it is true, the purpose which visual sensations would otherwise serve. Again, words heard or read enable you to act with reference to the matters about which they give information; here again, a present sensible (or imaginal) stimulus, in virtue of habits formed in the past, enables you to act with reference to an object which is not sensibly present. The whole essence of the practical efficacy of "thought" consists in sensitiveness to *signs*: the sensible (or imaginal) presence of A, which is a sign of the present or future existence of B, enables us to act in a manner appropriate to B. Of this, words are the supreme example, since their effects as signs are prodigious, while their intrinsic interest as sensible occurrences on their own account is usually very slight.

The operation of signs may or may not be accompanied by consciousness. If a sensible stimulus A calls up an image of B, and we then act with reference to B, we have what may be called consciousness of B. But habit may enable us to act in a manner appropriate to B as soon as A appears, without having an image of B. In that case, although A operates as a sign, it operates without the help of consciousness. Broadly speaking, a very familiar sign tends to operate directly in this manner, and the intervention of consciousness marks an imperfectly established habit.

We may give more precision to the definition of meaning by introducing the notion of "mnemic causation". By this I mean that sort of causation in which the past history of the animal in question is an essential factor—the sort studied by Semon in his two books *Die Mneme* and *Die mnemischen Empfindnugen*. This is the sort exemplified in the fact that a burnt child fears the fire. I am not concerned for the present with the question whether mnemic causation can be reduced to ordinary physical causation in nervous tissue; I am only concerned with the fact that *prima facie* it marks out certain peculiarities in the behaviour of animals, and, to a lesser degree, of plants.

We find sometimes that, *in mnemic causation*, an image or word, as stimulus, has the same effect (or very nearly the same effect) as would belong to some object, say a certain dog. (Other things besides words and images may have this characteristic, and in that case will have meaning; but words and images are the most notable examples). In that case, we

say that the image or word "means" that object. In other cases, the mnemic effects are not all those of one object, such as a particular dog, but only those shared by all objects of a certain kind, *e.g.*, by all dogs. In this case, the meaning of the word or image is general: it means the whole kind. Generality and particularity are a matter of degree. If two particulars differ sufficiently little, their mnemic effects will be the same; therefore no image or word can mean the one as opposed to the other; this sets a bound to the particularity of meaning. On the other hand, the mnemic effects of a number of sufficiently dissimilar objects will have nothing discoverable in common; hence a word which aims at complete generality, such as "entity" for example, will have to be devoid of mnemic effects, and therefore of meaning. In practice, this is not the case: such words have *verbal* associations, the learning of which constitutes the study of metaphysics.

We may therefore lay down the following definitions:—

(1) A "sign" is an occurrence which, through mnemic causation, has mnemic effects (not, in general, other effects) appropriate (from the point of view of the animal's instincts and desires) to some other occurrence or set of occurrences with which it is apt to be associated.

(2) In such a case, the other occurrence or set of occurrences is the "meaning" of the occurrence which is a sign.

III. By H. H. Joachim.

Though I have resolved to stand aside from the discussion between Dr. Schiller and Mr. Russell, I fully appreciate its importance. Thus—to mention but two of the many grave problems in dispute—is Mr. Russell right in thinking that his intellect is only "a certain habit in the use of words"? And is the meaning of Dr. Schiller's paper, as he himself suggests, "essentially an activity and attitude" which he has "taken up towards objects and energetically projected into them like an *a* particle . . ."? If only I could convince myself that both these questions must be answered in the affirmative, a brilliant light would be thrown on much that is at present obscure to me in the writings of both disputants.

But neither Mr. Russell nor Dr. Schiller profess to have *proved* these interesting suggestions. And since I distrust my own capacity to decide such abstruse and highly speculative issues, I propose to devote myself to a less ambitious task, and to examine (as minutely as I can within the space allotted

to me) certain perplexing features in Mr. Russell's theory of "meaning" and "belief". For the more I study his Article [1] and his Reply to Dr. Schiller, the more I am perplexed, bewildered and dismayed. It is not merely that I think him mistaken. There would be nothing in that to surprise or dismay me. To speak frankly, indeed, I have never been able to agree with Mr. Russell's metaphysical assumptions (for metaphysical they are, even if they are also "scientific"), or to accept his own estimate of the value of the method of analysis he employs. Much that to him is plain fact and matter of empirical observation I am forced to regard as fiction and mythology: and in many of the results of his analysis I can see only the products of indefensible abstraction, of loose thinking and uncritical acceptance of the catchwords of popular Psychology. In thus describing my own attitude to Mr. Russell's position and method, I am merely stating what both of us (as I believe) have long recognised, and what for my own part I profoundly regret. But my bewilderment on the present occasion is not entirely, nor even mainly, due to this fundamental difference between our philosophical positions—or, if Mr. Russell prefers the term, between his "Science" and my "Philosophy". What most dismays me is that, *if I accept the framework within which his account is developed and consider his actual statements*, I find him asserting what nobody, least of all a man of his "habit in the use of words," can possibly *think*.

1.

Let us examine first what Mr. Russell says about "visual images" and their "meaning". "The chair opposite to you is empty; you shut your eyes and visualise your friend as sitting in it." [2] Or again "You are in a familiar room at night, and suddenly the light goes out. You will be able to find your way to the door . . . by means of the picture of the room which you have in your mind." [3]

Now, up to a certain point, there is no dispute about the facts. I can "imagine" or "visualise" an absent friend: I can "picture" the room in the dark, or (for that matter) in the light with my eyes shut. Nor is there any harm in the loose metaphors of ordinary speech, unless we take them

[1] "On Propositions: What they are and how they mean" (Aristotelian Society, Supplementary Volume II.: *Problems of Science and Philosophy*, pp. 1-43). [2] *Article*, p. 11.

[3] *Reply*. We must remember throughout that "in my mind" means, on Mr. Russell's view, "inside my skin".

at their face-value. Thus, when I "visualise" the room, it is natural enough to say that I "have a picture of it in my mind". And when I "imagine" an absent person, I may, like Mr. Russell's "ordinary uneducated" friend,[1] suppose myself to be "calling up a visual picture". Nobody, I should have thought, would take these picturesque periphrases as exact and literal descriptions of fact, unless he was very uneducated or thoroughly corrupted by bad Psychology. Nobody, I should have thought, would analyse "visualising" or "imagining" into "calling up," and into the "visual picture" or "image" which is summoned, and regard either or both of these *abstracta* as isolable constituents, as actual constituent parts, of the "visualising". And nobody, I should have thought, would seriously contend that, when I "visualise," there is in fact occurring "in my mind" or "inside my skin" a "visual picture"—a constituent part of my "visualising," a something which, in "visualising," I do in fact "call up" and see. One might as well contend that, when I look at a tree, there is, as a constituent part of my "seeing," a "visual sensation" occurring in my mind or inside my skin: or indeed that, what I really "see," are the twin inverted images, which you may detect on my pupils or which the physiologist may imagine to be imprinted on my retinæ.

Yet, if I am not mistaken, Mr. Russell's analysis of "visualising" does in fact isolate the "visual picture" from the "calling up," and convert the popular periphrasis into a literal description. Under his treatment, the "visual picture" becomes an independent event or "imaginal phenomenon,"[2] isolated from the visualising, though still *called* "visual" and a "picture". And, as thus isolated, it is supposed to be one of those "observable entities," of which (as he declares) "meaning is an observable property".[3]

[1] *Article*, p. 11. Owing no doubt to her defective education, Mr. Russell's friend seems to have assumed that the two alternatives he put before her were exhaustive: *i.e.*, that, unless she could "call up a visual picture," she must be unable to "visualise" altogether and could "only use words describing what such an occurrence would be like".

[2] *Reply*.

[3] *Reply*. It is impossible to forget (*a*) that the word "entity" would "have to be devoid . . . of meaning," were it not that it has "verbal associations, the learning of which constitutes the study of Metaphysics" (*Reply*), and (*b*) that meaning is a "relation," that a relation "constitutes" meaning and that a word not only "has" a meaning, but is related "to its meaning" (*Article*, p. 19: *cf.* p. 7). And remembering these statements, I feel certain difficulties which I cannot persuade myself to dismiss as merely verbal. Can an "entity" (with its sheerly metaphysical affinities) be "observed"? Is a "relation" always—or ever—an "observable property"? And is a word, in so far as it has a meaning, related to a relation?

To begin with, then, the "visual picture" is an event in me, not in the outer world.[1] As occurring "inside my skin," it is an "introspective datum," observable only by myself. Since, however, "it *may* be a *physiological* event,"[2] I suppose that one day we may hope—by skilful vivisection and preparation, and by using the appropriate chemical reagents—to observe the images as they occur inside another person's skin.

Next, we must notice that the image may be, or become, a constituent of that "fact" or "complex" which Mr. Russell calls an "image-proposition".[3] And since an image-proposition is as "solid" and "actual" a fact as anything in the Universe—since it is in no sense "imagined" or "ideal" in contrast to what is "actual" or "real"[4]—the images, which are its constituents, are clearly not "imagined" or "ideal" either.

Nevertheless—and here the doctrine becomes very hard to follow—images are "purely mental,"[5] "non-physical data," "not amenable to the laws of physics," and "radically distinct from sensations".[6] I take these statements on trust (for I cannot myself observe these "entities"), though the reasons Mr. Russell gives do not seem very convincing. He says (*a*) that visual images, "if taken as sensations, contradict the laws of physics".[7] But *must* I take my "visual image" as a visual sensation?[8] Unless I commit this blunder, how does my "visual image" contradict the laws of physics? Is

[1] *Article*, p. 11. [2] *Ibid.*, p. 11.

[3] *Ibid.*, *e.g.*, pp. 26, 29.

[4] *Ibid.*, p. 37. I shall return to image-propositions below.

[5] *Ibid.*, p. 27. I cannot pretend to conjecture what Mr. Russell means by "mental".

[6] *Ibid.*, p. 14. In view of Mr. Russell's argument (against the "behaviourist" theory of language) that these "non-physical data" are indispensable to thinking, it is puzzling to find him still hoping that thought "may be explained some day in terms of physics" (*Reply*).

[7] *Article*, p. 14.

[8] Mr. Russell (*Article*, p. 14) says that to "locate" the image of my absent friend "as a physical phenomenon" in the empty chair, would contradict the laws of physics: and to locate it in my own body, would conflict with its character as "visual". But he has already "located" the image in my body: for it is an event occurring inside my skin. Nor, on his theory, does this "location" conflict with its "visual" character: the conflict only arises if I suppose the image to be (not a "visual," but) a "visible" event in my body. He does in fact suppose that: for he confuses the bodily or nervous change (with which my "visualising" is connected, and on which it in part depends) with an isolable constituent of the "visualising"—with a "picture" which I call up and gaze upon. But, if we rid ourselves of the metaphorical jargon, is it not obvious that I may "visualise" my absent friend without believing him to be corporeally present in the chair or "inside my skin"—*i.e.*, that I may "visualise" without suffering either from hallucination or from insanity?

it, on Mr. Russell's theory, any more recalcitrant to those laws, than *e.g.* a tooth-ache or a stomach-ache? These too occur "inside my skin"; and they differ, because thus confined, from a "sensation" of noise—*e.g.*, from a clap of thunder.[1] Yet—so we are assured—"it is not very difficult to find a place for tooth-ache in the physical world"[2]: and the stomach-ache "belongs" to my body,[3] which I presume is physical. Moreover, are not "images" amongst those "elements" to which "thought and will and purpose and the rest of the apparatus of our mental life are reducible"? Yet these "elements," we are expressly told, "concern my inside in just the same sense in which a stomach-ache does, and in no other".[4]

Nor (*b*) is Mr. Russell's other reason more convincing. A visual image, he says, "must be radically distinguished from a visual sensation, since it affords no part of the data upon which our knowledge of the physical world outside our own body is built".[5] But my "visual images"—if I could "observe" them—would afford data through which I might obtain knowledge of my own body[6]; and my own body is a part of "the physical world outside" *your* body. Why, then, should not *your* knowledge of the physical world be derived in part from what I discover (and tell you) about my "visual images"?

Disregarding these and other difficulties, let us accept Mr. Russell's account as an accurate description of his own "visual pictures"—those which he has himself "observed". Each of these images (to summarise its leading characteristics) is an event occurring inside his skin; real and solid and actual, not imagined or ideal; purely mental, non-physical, not amenable to the laws of physics. What is the "meaning" which may be observed as a property of these "observable entities"?

(*a*) According to the *Article*, a visual image "resembles" or "copies" sensations. And when, *e.g.*, our image of a familiar room resembles "what the room was when we previously saw it," "we may say that our image 'means'

[1] *Article*, p. 13. We must bear in mind, even though Mr. Russell sometimes forgets, that (*cf.* p. 26) a sensation "is simultaneously part of the mind of the person who 'has' the sensation, and part of the body which is 'perceived' by means of the sensation".

[2] *Ibid.*, p. 12.

[3] *Ibid.*, p. 13. [4] *Reply*. [5] *Article*, p. 11.

[6] *Cf.* Mr. Russell's remarks on the scientific value of the knowledge of my own body which I obtain through my essentially "private" bodily sensations (*Article*, p. 12).

the room".[1] We *may* say so: but do we in fact? If Mr. Russell is accustomed to say of a photograph that it "means" its original, or of a forged bank-note that it "means" what it copies, there is no law to prevent him from indulging in so harmless an eccentricity. But most of us reserve "means" for "signs" or "symbols" with little or no resemblance to what they symbolise. A violet "means" humility, and a fox "means" cunning. But the forgery is a "close imitation" of the genuine note, and the photograph "*is* Jones" or "is exactly like him".

(*b*) Another (and, as I think, incompatible) theory is put forward in the *Reply*. My "visual image," which I "have in my mind" when the light goes out, is supposed to be "associated" with my past "visual sensations" of the illuminated room. If, and when, my "visual image" causes[2] actions "appropriate" to these associated sensations (if, *e.g.*, it enables me to reach the door), then, and therefore, it "means" them. In other words, the image need not "resemble" the sensations in order to "mean" them. It "means" them if, and because, it produces the effects which ("from the point of view of" my "instincts and desires") are "appropriate" to them. Suppose, then, I call up a "visual picture" of an absent enemy. *According to the Article*, this "visual image" will "mean" my enemy if, and because, it "copies" him—*i.e.*, resembles what he was when I previously saw him. But, *according to the Reply*, the image will "mean" my enemy only if, and because, having been "associated" with visual sensations of him, it throws me into a fury, or leads me to run away, or causes whatever actions may, from the point of view of my instincts and desires, be "appropriate" to the visual sensations which were (let us not forget) "simultaneously" parts of my mind and parts of his body.

Would a "visual image" have *no* meaning the first time it occurred? And would it be equally devoid of meaning, even after it had become "associated" with past sensations, if it failed to cause actions "appropriate" to the latter—or if it caused no actions at all? Or are we to assume that no "visual image" ever occurs for the first time (or without an established "association"), and that every image *must* cause actions "appropriate" to "associated" sensations? I cannot conjecture how Mr. Russell would answer such questions:

[1] *Article*, pp. 22-23. I think the whole "copy" theory wrong, but I cannot discuss the matter here.

[2] By what Mr. Russell calls "mnemic causation"—a name which serves like putty to conceal the chinks in his theory.

still less, how he would defend his conceptions of "Association" and "Causation" against the criticisms of writers like T. H. Green and F. H. Bradley. The criticisms, it is true, were published long ago: but the fact that they are familiar and even classical, and that nobody has ever succeeded in answering them, does not in the least diminish their force.

2.

Having analysed "visualising" into a "visual image" (which occurs as an "observable entity" in the mind or inside the skin) and a "having" or "calling up," Mr. Russell applies a similar analysis to Belief. Belief (so I understand) "consists of" or "contains" the following isolable constituents: (*a*) a proposition which is believed,[1] (*b*) a feeling which is believing,[2] (*c*) a relation between the proposition and the feeling,[3] and (*d*) a relation between the proposition and its "objective," *i.e.*, "the fact which makes it true or false".[4]

Much as I should like to test Mr. Russell's amazing claim that his theory of belief "accords with what can be empirically observed . . . and rejects everything mythological or merely schematic,"[5] the utmost I can attempt in the space at my disposal is to examine some of his statements about propositions and their meaning.

A proposition is "*what we believe when we believe truly or falsely*".[6] It "is, whenever it occurs, an actual fact,"[7] as

[1] The belief expressed in words normally contains two propositions, *i.e.*, an image-proposition as well as a word-proposition: *cf. Article*, pp. 28-29. The possibility (which Mr. Russell neither asserts nor denies) that "a single simple image may be believed" (p. 28), may be disregarded for my present purpose.

[2] Mr. Russell thinks there are "various different feelings collected together under the one word 'belief'". The collection includes "memory, expectation, and bare non-temporal assent"—and *possibly* other "feelings" (*Article*, p. 32).

[3] The statement that "in any case belief is something which has to be added to an image-proposition" (*Article*, p. 41) suggests that this relation is one of addition. But since "added to" implies an "act," and the theory claims to have dispensed with everything so "schematic" as an "act" or a "subject" (*cf.* pp. 25-26, 27-28), "added to" is perhaps only a picturesque equivalent for "co-exists with".

[4] *Cf. Article*, pp. 24, 29, etc.

[5] *Ibid.*, pp. 27-28.

[6] *Ibid.*, p. 1. I disregard the alternative description of the proposition as "*the content of a belief*, except when, if ever, the content is simple" (p. 28: *cf. e.g.*, p. 24). "Content" is a slippery word—at least as slippery as "experienced," which Mr. Russell condemns as "calculated to create a smoke-screen about any position". (*Reply.*) Belief "contains" two relations and a feeling as well as a proposition: and no reason whatever is given for confining the term "content" to the proposition, or for assuming that belief "contains" it in any distinctive sense.

[7] *Article*, p. 30.

"solid" and "actual" as the fact which makes it true or false.[1] And, being a fact, it is "complex"; *i.e.*, it "has," "contains," "consists of," or "is composed of," constituents. Whether its constituents are always themselves complex, is uncertain: for Mr. Russell is careful neither to assert nor to deny that "the world contains" simples as well as facts.[2]

There are two kinds of propositions: those which consist of words and those which consist of images.[3] Let us follow Mr. Russell's example and "begin with the most tangible thing: the proposition as a form of words".[4]

(i) A word-proposition, we are told, "is a complex symbol"; and its meaning "depends upon the meanings of the separate words"—the relatively simple symbols of which it consists.[5] Now, Mr. Russell argues—and I will assume he is right, though I am far from thinking so—that, whereas "words used demonstratively describe and are intended to cause sensations, the same words used in narrative describe and are intended to cause images".[6] In the narrative use of language, the single words describe a "memory-image" in the speaker or writer, and "create" or call up an "imagination-image" in the hearer or reader: and it is in this actual, or possible, result of their use, that their "meaning" essentially lies.[7]

Suppose, therefore, in narrating to you the events of Roman History, I say "Antony," I am describing a "memory-image" in myself, and "creating" (or trying to "create") an "imagination-image" in you, the hearer. The images in question, as we already know, are "copies" more or less resembling "sensations"—my own and also yours. The same holds, if I go on to say "loved": except that, as we shall see, "loved" describes and creates not an *image* of a relation between sensations, but the identical relation that related (or relates) the sensations themselves.[8] And if I complete the sentence by adding the word "Cleopatra," I am again

[1] *Article*, p. 37.

[2] *Ibid.*, *e.g.*, pp. 1, 2, 28, 29, etc. I suppose Mr. Russell would say that "the simple sensible qualities that enter into an image" (p. 23) are postulated only subject to the acceptance of "Hume's principle". Yet, if "Hume's principle" be rejected, what remains of the theory that images "copy" sensations?

[3] *Ibid.*, p. 29.

[4] *Ibid.*, p. 7.

[5] *Ibid.* Mr. Russell recognises (though, as I think, inadequately) that the meaning of the single words depends in turn to some extent upon the meaning of the proposition as a whole: *cf.* p. 27.

[6] *Ibid.*, p. 22.

[7] *Ibid.*, pp. 21-22.

[8] *Cf.* below. We must add (a reservation which does not affect the main point) that the past tense in "loved" does not belong to *what is believed*, but to the "feeling" which is the "believing" (*cf. Article*, pp. 29-30).

describing a "memory-image" of my own and "creating" (or trying to create) an "imagination-image" in you. Thus, since the single words "mean" the images they describe and are intended to cause, we reach Mr. Russell's conclusion that "as a general rule, a word-proposition 'means' an image-proposition".[1] And when he says "Antony loved Cleopatra," he means—or at least the word-proposition means—that an Image loved an Image. It describes the unholy passion of one event inside his skin for another, and creates (or is intended to create) a corresponding disturbance inside the hearer's skin. It "means" that two "purely mental" entities were—or are—consumed with lust for one another.

Mr. Russell may say what he likes: but, with the utmost respect, I must refuse to believe that he *thinks*, or *can think*, his assertion that "Antony loved Cleopatra" means anything of the kind.

(ii) The images, of which an image-proposition consists, "mean" (as we saw) the sensations which they severally "copy" or resemble.[2] But the image-proposition as a whole does not "mean" anything. In its case, "'referring to' takes the place of 'meaning'"[3]: it "has an objective reference dependent upon the meanings of its constituent images".[4]

Mr. Russell is determined to maintain that "truth consists in correspondence".[5] And, in this desperate endeavour, he formerly advocated a theory that belief consists "in a multiple relation of the subject to the objects constituting the 'objective'". This theory, as he now appears to recognise, made it difficult—many of us would say "impossible"—to understand what it is we believe when we believe falsely.[6] Moved perhaps to some slight extent by the recognition of this "difficulty," but chiefly (it would seem) by the desire of eliminating so "schematic" an element as the "subject," he has advanced—if it is an advance—to his present position. *What we believe* (he now suggests) is a proposition[7] intervening between our believing and "the fact which makes our belief true or false," *i.e.*, the "objective" of the proposition. Truth and falsity consist respectively in the corre-

[1] *Article*, p. 29: *cf.* p. 30.

[2] Disregarding the theory put forward in the *Reply*, and speaking roughly.

[3] *Article*, pp. 36-37.

[4] *Ibid.*, p. 30.

[5] *Ibid.*, p. 36.

[6] *Ibid.*, p. 27.

[7] Word-propositions, as well as image-propositions, "refer to" objectives (*Article*, pp. 36-37): but normally (as I understand Mr. Russell) word-propositions "refer to" objectives only through the image-propositions which they "mean" (*cf.* pp. 28-29).

spondence or failure of correspondence between the proposition and its "objective". A true and a false proposition (*e.g.*, The window is to the left of the fire, The window is to the right of the fire) both "refer to" the same "objective," which neither of them "means": or the same proposition is true or false according as it "refers to" different "objectives" neither (or none) of which it "means".[1] What we believe, when we believe falsely, is a false proposition—*i.e.*, a proposition "referring to" an "objective" with which it does not correspond.

Let us see, taking Mr. Russell's own example, exactly what is involved in "the simplest possible schema of correspondence" between an image-proposition and its objective.[2] In the room I saw last week the window was to the left of the fire. I now "call up a picture" of the room and "give to this picture that sort of belief which we call 'memory'". *What I believe* is an image-proposition, a "complex image," which Mr. Russell analyses (for the present purpose) into an image of the window, an image of the fire, and a spatial relation between them. The "objective" —the fact which makes the image-proposition true or false— is (or *was* last week) one group or complex of sensations ("the window") actually existing to the left of another group ("the fire"). The two images in the image-proposition severally "copy" or "resemble" (and therefore "mean") the "window" and the "fire".

Suppose *first* that the image-proposition is *false*. In that case, the relation, which couples the images, does not (or did not) "hold" between the elements of the "objective". There is no fact, no complex consisting of sensations and a relation between them, "corresponding to" this false image-proposition. There never was any such counterpart fact, though there were actual sensations of which my present images singly are "copies". *What I believe*, when I believe falsely, is an image-proposition which, as a whole (as a proposition), neither has, nor had, a counterpart complex or fact. And why this proposition should be supposed to "refer to" any one "objective" rather than another—or indeed to any "objective" at all—I cannot understand. Mr. Russell, I presume, would "explain" this difficulty (if he admitted there was a difficulty) by an appeal to the special quality of that feeling in his "collection" which we call "memory".

Suppose *next* that the image-proposition is *true*. In that case, according to Mr. Russell, the images are coupled by

[1] *Article*, pp. 36-38. [2] *Ibid.*, pp. 37-38 : *cf.* also p. 30.

"the same relation"—by "the very same relation"[1]—as that which couples (or coupled) the elements of the "objective". Now, those elements are sensations. And sensations are *simultaneously* parts of the mind of the person who "has" them, and parts of the body which is "perceived" by means of them.[2] In our example, the sensations in question were "parts of my mind" last week: and to-day they, as *sensations*, no longer exist, for I am not now *seeing* the window or the fire, but only imagining them. The sensations, therefore, vanished a week ago. Nevertheless, we are asked to believe that "the very same relation," which coupled these vanished sensations, is *now* coupling the constituent images of my image-proposition. Hrs this relation survived, bare of all terms, for a week? Or did it vanish with its terms—the past sensations—a week ago: and has it now emerged, by some miraculous resurrection, to couple two "purely mental" events inside my skin?

Clearly, on any interpretation, this relation is a very remarkable "entity" indeed. And perhaps the most remarkable thing about it is that it is postulated by a theory which claims to reject "everything mythological".[3]

[1] *Article*, p. 38. [2] *Ibid.*, p. 26. [3] *Article*, p. 28.

II.—THE PHILOSOPHICAL ASPECT OF THE THEORY OF RELATIVITY.[1]

A Symposium by A. S. Eddington, W. D. Ross, C. D. Broad, and F. A. Lindemann.

I. By A. S. Eddington.

It is natural for a scientific man to approach Einstein's theory of Relativity with some suspicion, looking on it as an incongruous mixture of speculative philosophy with legitimate physics. There is no doubt that it was largely suggested by philosophical considerations, and it leads to results hitherto regarded as lying in the domain of philosophy and metaphysics. But the theory is not, in its nature or in its standards, essentially different from other physical theories; it deals with experimental results and theoretical deductions which naturally arise from them. The only point in which it shocks our conservatism is that it regards the investigation of the properties of physical time and space as being a legitimate subject of experimental and theoretical research, like the investigation of the properties of matter. Time and space are things which a physicist is continually using and measuring; and it is difficult to see why he should not be allowed to investigate their properties without being condemned as a metaphysicist. I think the opposition arises from the impression that in their physical aspects the properties of time and space are so simple and so inevitable that we have long known all that there is to be learnt by physical methods; and therefore if an investigator spends any time over these he must necessarily be trespassing beyond legitimate physics. On the other hand, we know that much remains to be found out as to the physical constitution of matter; and so the man who occupies himself with it is not presumed to be speculating metaphysically as to the meaning of substance. But the relativity theory makes it clear that the experimental study of the physical aspects of space and time has not been

[1] Contributed to the International Congress of Philosophy, 1920.

exhausted; it applies the recognised scientific method to this study; and there is no breach of continuity with ordinary physics. It unfolds a physical theory of space and time and matter, which, we can scarcely doubt, marks a great advance. It would be rash to suppose that it reaches finality; but it bears all the indications of being one of the more permanent stages in the advance towards Truth.

I would emphasise then that the theory of relativity of time and space is essentially a physical theory, like the atomic theory of matter or the electromagnetic theory of light; and it does not overstep the natural domain of physics. But, speaking to an audience of philosophers, I shall not hesitate to trespass beyond the borderline on my own account. I shall be a stranger in a strange country; and the lurking pits might well intimidate me, if I did not rely on your friendly hands to pick me out.

We can perhaps obtain some insight into the meaning of Relativity by analysing the idea of "green". Green light is primarily a sensation experienced by a normal individual, which is obviously subjective. In current physics it is supposed that there is in the external world an exact objective counterpart to green light, *viz.*, electromagnetic oscillations of a particular quantitative character; and, so far as physics is concerned, the name "green light" is transferred to this objective counterpart. Further this quantitative character can be consistently estimated by physical appliances other than the eye, so that even in its subjective aspect it is no longer necessary to insist on the psychological significance of green. We ought now to be able to dispense with the idea of any recipient of the light, so that there are electromagnetic waves in Nature which can be described as absolutely green. But that is too hasty a conclusion. If we take an observer travelling rapidly to meet these waves, they will appear to him not green but blue; if this is an illusion, it is shared by his spectroscope, his photo-electric cell, the chlorophyl of the plants, by everything travelling with him. For a whole moving world the light is blue; for a differently moving planet it will be orange; what meaning then can we attach to its absolute greenness? Why have we singled out green as the true colour, when to the different conceivable worlds it takes all hues of the rainbow? We are forced to admit that we called it green merely because it was green for some particular observer whom we had in mind at the start. Now here modern experimental investigation comes in; we have entirely failed to discover anything pre-eminent about this particular observer, or any other observer, entitling his views to more

weight than those of observers with different motions. If we lost him, there is no criterion whatever by which we could reconstruct him. It is the old philosophical point (perhaps unexpectedly applicable) that absolute motion is meaningless and undetectable, and therefore observers merely differing in their motions present no criterion for singling out a leader. We cannot call the light absolutely green, when it is only green for a particular observer arbitrarily selected. This drives us back practically to the starting point; green is not an objective quality of the light. Even when we have abstracted the psychological significance of colour, it still remains a relation on which the objective reality and some specified recipient are both involved. It is commonly said that a sodium atom always radiates yellow light; but the light is only yellow relative to the atom itself, or to an observer having the same motion. Intrinsically the light has no particular colour, and observers can be imagined for whom it is violet or red. The relativity theory does not arbitrarily divide this colour into objective yellowness plus a correction for the motion of the recipient; it simply accepts the plain fact that the colour-name applies to a relation of the reality to a recipient.

At first sight this seems to throw over the common view that colour is determined by the length of the electromagnetic waves. Is not the true and absolute colour-quality that which corresponds to the length of the waves; whereas the colour actually perceived may be modified by the observer's motion according to well-known principles? This brings us to the most revolutionary idea in the relativity theory. Length itself is not an absolute character intrinsic in the external world; like colour, it is a relation between the thing in Nature and the observer, being modified by his motion. This has escaped common notice, because all observers who can compare notes share practically the same motion—that of the earth. It is only recent delicate experiments that have revealed it. If length cannot be relied on as absolute, what shall we say of the other quantities of physics? The answer comes that all the more familiar terms of physics—duration of time, mass, force, energy, etc.—denote not objective characters, but relations to some observer or his idealised equivalent; and, in particular, these relations are modified by his motion.

We thus see that the knowledge contained in current physics is only a knowledge of the relations of Nature to particularly circumstanced observers. It is not on that account to be condemned; we shall continue to study and ex-

tend this relative knowledge. But it is important in many cases in physics, and still more in philosophy, to appreciate its relativity. We must make a special study of the way in which the relation changes for differently circumstanced observers, and abandon the crude methods which arose under the mistaken impression that under the familiar names we were dealing with things objective and independent of us. When this is done many of the perplexities of modern science are cleared up, and a great simplification results.

Since physics has not hitherto dealt with the absolute world, we may ask whether it is competent to do so. It is. The problem is not so very difficult to solve; it was not solved before because until recently we were unaware that there remained such a problem to solve. To put the claim rather more modestly and more accurately, we can arrive at a description of the physical phenomena which is independent of the motion of the observer (that being apparently the confusing factor in our present relative knowledge). In a sense the expression of this knowledge is still relative, because our imaginations can only work with material which is in some degree familiar; but the recipient, whom we set up to relate external Nature to, is now only a dummy whom we can change freely without altering anything in the description. It is not like the older relative knowledge in which *green* has to become *red* when we change the observer.

The absolute world of physics thus reached is four-dimensional, events outside us being arranged in an indissoluble four-fold order which may be regarded as a combination of space and time. Space and time are relations to an individual, and as relations are quite separate. But there is not one objective reality at the far end of the space-relation, and another reality at the far end of the time-relation; both relations spring from one common source. Perhaps I may venture to indicate how the common distinction of space and time arises. The observer himself is part of the world, and from a four-dimensional point of view we must regard him as having the form of a *worm*. He distinguishes the order of events in the direction of his length as time, and his other three dimensions he regards as space. He applies this to his own elongated form, and considers that he himself has considerable duration in time, but more modest extension in space. We easily see that worms whose lengths lie in different directions (or, as we should ordinarily say, individuals who are moving with different velocities) make a different dissection into time and space. But this is not all; the objective four-dimensional continuum is indissoluble; but if we take in it two arbitrary

events A and B, the relation between them (out of which their physical aspects arise) is one or other of two qualitatively distinct kinds. On developing the theory, it is found that if the relation of A to B is of the first kind it is possible for a particle of matter to extend from A to B, but not if it is of the second kind. That is a property inherent in the constitution of matter. In physics we deal only with observers who possess material bodies, however abstract they may be in other respects; and consequently the length of one of our worms cannot lie along AB unless the relation between the two points is of the first kind. (In ordinary language the observer must not travel faster than light.) It follows that although the worms can lie in all kinds of directions within wide limits, yet in every case the relations of events along the length of a worm, which he takes to be the time-order, are qualitatively and objectively of a different kind from the relations in transverse directions which he adopts as space. That is why time and space appear and are so different. The observer's velocity (or four-dimensional extension) determines his separation of time and space; but behind that there is a rudimentary objective differentiation of orderly relation, which limits the observer's velocity and is by that means carried through into the resulting separation.

We believe that this theory (or rather the analysis which is equivalent to it) greatly elucidates the meaning of our measurements of space and time, and has far reaching consequences in physics. I doubt whether its importance in philosophy is so immediate as is often supposed, because it leaves us still with an objective distinction between time-like and space-like order. The mathematician differentiates these by the aid of his symbol $\sqrt{-1}$; but that, of course, does not throw light on their intrinsic unlikeness.

Minkowski summed up the earlier relativity theory in the celebrated phrase, "Time and Space in themselves sink to mere shadows". Moritz Schlick, in his admirable book,[1] has said that this must now be extended to—Time and Space and *Things* sink to shadows. "The combination or oneness of space, time and things is alone reality; each by itself is an abstraction." With *things* I take it that he includes not only matter but all that is commonly supposed to be *in* space and time, for example, fields of force. It is so easy to give glib acceptance to this doctrine, so difficult to rise to it in our outlook on physics. The non-Euclidean heterogeneous space of Einstein is a natural consequence of this view; for "things"

[1] *Space and Time in Contemporary Physics.*

are everywhere heterogeneous, and it is unlikely that the same oneness can manifest itself as homogeneity in its space-aspects and heterogeneity in its thing-aspects.

I have tried to show elsewhere [1] the exact method by which, starting from a relation undefinable in its absolute character, we arrive from a single source at the physical quantities which describe space and time on the one hand and the quantities which describe things on the other hand. If we describe the character (or geometry) of space and time throughout the world, we at the same time necessarily describe all the things in the world. The conspicuous instance of this is in Einstein's theory of gravitation, where in describing the geometry of space and time throughout the solar system, he finds himself describing at the same time the sun's gravitational field. The same applies also to other things such as matter. The difference between space occupied by matter and space which is empty is simply a difference in its geometry. There seems to be no reason to postulate that there is an entity of foreign nature present which causes the difference of geometry; and if we did postulate such an entity it would scarcely be proper to regard it as physical matter, because it is not the foreign entity but the difference of geometry which is the subject of physical experiment.

In contemplating the starry heavens, the eye can trace patterns of various kinds—triangles, chains of stars, and more fantastic figures. In a sense these patterns exist in the sky; but their recognition is subjective. So out of the primitive events which make up the external world, an infinite variety of "patterns" can be formed. There is one type of pattern which for some reason the mind loves to trace wherever it can; where it can trace it, the mind says, "Here is substance"; where it cannot, it says "How uninteresting! There is nothing in my line here". The mind is dealing with a real objective substratum; but the distinction of substance and emptiness is the mind's own contribution, depending on the kind of pattern it is interested in recognising. It seems probable that the reason for selecting the particular type of pattern is that this pattern has (from its own geometrical character, and independently of the material in which it is traced) a property known as *Conservation*. Reverting from the four-dimensional world to ordinary space and time, this property appears as *permanence*. That the mind would necessarily choose for the substance of its world something

[1] MIND, Vol. XXIX., No. 114.

which is permanent seems natural and inevitable. The interesting point is that there is no obligation on Nature to provide explicitly anything permanent; the permanence is introduced by the geometrical quality of the configuration, which the mind looks out for in whatever Nature provides.

Now it appears that a great number of the well-known laws of physics, mechanics and geometry are implicitly contained in this identification of substance. That is to say, these laws do not govern the course of events in the objective world, but are automatically imposed by the mind in selecting what it considers to be substance. They are identities contained in the definition of the geometrical character of the pattern which the mind hunts out. If all the discoveries of physics related to laws of this kind, we should be forced to admit that physics has nothing to contribute to the great question of how the world outside us is governed. I am not as yet prepared to admit that. I think that we do, more especially in modern physics, encounter the genuine laws governing the external world, and are attempting—perhaps rather unsuccessfully—to grapple with them. But the great exact laws of gravitation, mechanics and electromagnetism, by which physics has won its high reputation as an exact science, all appear to belong to the other category; and, when these are set aside as irrelevant, our claim to have grasped the type of law, or even the meaning of law, prevailing in the world outside us is reduced to very modest proportions.

An aged college-bursar once dwelt secluded in his rooms devoting himself entirely to accounts. He had cut himself off entirely from the life around him, and he realised the intellectual and other activities of the college only as they reflected themselves in the bills. The accounts were his world; and the different items took on an individuality in his mind. He vaguely pictured an objective reality at the back of it all —some sort of parallel to the real college—though he could only imagine it in terms of £. s. d., which constituted its relation to him. His method of account-keeping had become inevitable habit, handed on to him from a long succession of hermit-like bursars; and he had no idea that he was in any way concerned in the method; it seemed impossible that the accounts could be put in any other way. But he was of a scientific turn, and he wanted to know more about the college—the world of his accounts. One day, in looking over the books, he discovered a remarkable thing. For every item which appeared on the credit side of the account, an equal

item appeared somewhere else on the debit side. "Ha!" said the bursar, "I have discovered one of the great laws governing the college. It is a perfect exact law of nature with no exceptions. Credit must be called plus and debit minus; so we have the law of conservation of £. s. d. This is the mode of investigation which alone can give me sure knowledge of the world, and I see no limits to the field it will ultimately cover. I have only to go on in this way, and I shall begin to understand why it is that prices are always going up."

Perhaps it is conservatism, but I am not prepared to press this analogy quite to its apparent conclusion. I do think that we have, like the bursar, tended to confuse the laws of economics with the laws of accounts—the laws under which the objective world is developing itself, and the laws inherent in the overlapping of the different aspects under which we relate it to ourselves. I think that the results in which physics has been so conspicuously successful are mainly of the latter character. But I think that the bursar's method of investigation was a sound one; I would not have him give up his books, and turn in despair to the faint confused sounds of an outside activity which from time to time penetrate the walls of his cell. *Ne sutor ultra crepidam.* The laws of economics are not going to be reached so easily as he supposed; they are not even on the same plane as his first sensational discovery belonged to; but by diligent study of his world of accounts he may yet be able to puzzle out something of the activity behind.

And so, when the seed reproduces the character of its parent, when the tree clothes itself in leaves, when philosophers are drawn together in congress, it may be misleading to compare the motive-laws with the familiar type illustrated by the law of gravitation. The line of demarcation is not between vital and inert phenomena. The point is that the idea of law even in the world of inert matter may, in some way as yet undefined, transcend the instances which are as yet known; that these instances are, indeed, not fair parallels for comparison. The old type of law must, of course, always be obeyed—the college may totter, but the bursar's accounts still balance. If this is indeed so, it will not be easy for the physicist, who, however, has already a strong suspicion that in the quantum phenomena, which he is now encountering everywhere, he is up against laws of a different type from those which have hitherto succumbed to his inquiries. But in the wider outlook on life this emancipation, if it prove true, is likely to be hailed with relief.

II. By W. D. Ross.

I do not propose in my contribution to the Symposium to discuss Prof. Eddington's paper, interesting as it is. His paper gives us not the line of argument which leads up to the theory of relativity, but rather the further speculations of one who has already been convinced by that line of argument. My difficulties begin further back, with the argument itself, and it is to some aspects of it that I will address myself. I should like, however, to comment on two remarks of his. 'There is no doubt,' he says, that Einstein's theory 'was largely suggested by philosophical considerations,' and a little later, 'It is the old philosophical point . . . that absolute motion is meaningless and undetectable.' It seems to be supposed by many of the scientists who have discussed the subject that philosophy condemns absolute motion, apart from any of the experimental grounds on which they themselves reject it; and they feel themselves fortified by this support from an independent source. Many philosophers have no doubt rejected absolute motion, but many others believe in it. For my own part, I think that Mr. Russell's chapter on the subject[1] is a complete refutation of at any rate the main philosophical arguments that have been urged against absolute motion.

I would make one other preliminary remark, with reference to Prof. Eddington's first page. The division of opinion about Einstein's theory is not in any sense one in which science and philosophy are ranged on opposite sides. Both scientists and philosophers are divided on the question; and the truth, on whichever side it lies, is to be reached by close thinking on certain questions, in one sense very simple, in another extremely difficult, competence to discuss which is not the monopoly of either scientists or philosophers, but whose solution is not so easy that either class of thinkers can afford to reject the aid of the other.

One of the difficulties about relativity is that its supporters seem in the very act of arguing for it to be implying its opposite. I will confine myself to the 'special theory'; until one can be satisfied about the truth of this, it would be useless to discuss the general theory which is an extension and in some degree a correction of it. Incidentally, one's faith in the argument should surely be somewhat shaken by the fact that the constant relative velocity of light, which is asserted in the special theory, is denied in the general. Were

[1] In *Principles of Mathematics*.

it a question of getting nearer to the truth by further experiment, there would be nothing surprising in this; but it is not satisfactory that 'the keystone of the old theory'[1] should later be so cheerfully dispensed with.

It seems to be generally agreed among relativists that the theory is forced on us in the first instance by the result of Michelson-Morley's experiment. We naturally assume light to have a constant absolute velocity in all directions; we therefore expect its velocity relative to the earth to be affected by the motion of the earth; but we find that apparently it is not. Hence we seem to be driven to accept one or other of two surprising theories, that of Lorentz or that of Einstein. Now why should we not adopt the hypothesis that the earth is at rest relatively to the ether? If it is, we should expect rays of light moving in different directions above the earth's surface to move with constant velocity relative to a starting-point on the earth, and there would be nothing surprising in the result of the experiment. But, I shall be told, this is to go back to the Ptolemaic view, which has long since been exploded. This, however, is not *my* solution; I am simply asking why it should not be the solution for a disbeliever in absolute motion. According to him, it is just as true that the station moves past the train as that the train moves past the station. It is then, as true that the rest of the universe moves relatively to the earth as that the earth moves relatively to the rest of the universe. The Copernican view is no truer than the geocentric; in fact they are the same view. 'But neither Ptolemy nor Copernicus was really right,' relativists will say, 'neither the earth nor the remainder of the universe is at rest; both are in relative motion, which is the only motion there is, and it is the existence of this motion that makes the Michelson-Morley result surprising and Einstein's explanation of it necessary.' But it is *not* the motion of the earth relative to the stars that makes the result surprising; it is the presumed motion of the earth relative to the ether. Now, that no such motion can be detected is a fundamental principle of their theory. Why, then, assume, as they do in their whole consideration of the experiment, that such motion exists? On their principles, the relative motion of the earth and the stars only requires that *one of the two* should be in motion relatively to the ether. The assumption that it is the earth that is so shows that relativists are Copernicans, and therefore at bottom not relativists.

But, I may now be told, relativists do not believe in an

[1] *I.e.*, of the 'special theory'. Prof. Broad in *Hibbert Journal*, April, 1920, p. 426.

ether at all. They speak with a divided voice on the subject, but their general opinion seems to be against this unfortunate entity, whose alleged attributes have always somewhat scandalised philosophers. There is, then, only motion of ordinary bodies relatively to one another. But then there is nothing whatever in the Michelson-Morley result to surprise and to call for Einstein's theory. There is no reason why the motion of the earth relative to the heavenly bodies should affect the velocity of rays of light in a laboratory, which have nothing to do with the heavenly bodies but only with the earth. It is only the assumption that the earth is moving (*a*) absolutely, or (*b*) at least with regard to the ether, that makes the result surprising and calls for either the Lorentz or the Einstein explanation. Disbelievers in absolute motion and in the ether have no need of Einstein's theory, and believers in absolute motion cannot accept it because it denies absolute motion.

Take, again, another assumption which is made by relativists in discussing the Michelson-Morley result. Prof. Broad [1] states three assumptions, and says that 'the rejection of any of them will merely bring us into conflict with some other set of well-attested experimental facts'. It is on the basis of the acceptance of these assumptions that all solutions other than those of Lorentz and Einstein are ruled out. One of these assumptions is 'that the velocity of light in stagnant ether is the same in all directions'. This assumption is described as 'the only reasonable one to make on the subject,' and it is rightly pointed out that its rejection would land us in greater difficulties than its acceptance involves. This does not mean that the *relative* velocity of light is constant. For this is the conclusion which is supposed to be established by the experiment, and therefore must not be presupposed in considering what is to be deduced from the result of the experiment. As far as I can see (though I may very well be mistaken) it can only mean (1) that light moves in equal times over equal distances in space, irrespective of direction, or (2) that it moves with equal velocity relatively to bodies at rest (or in like motion) relatively to the source of light, but in different directions from it. On the first interpretation, absolute motion is already admitted in one of the assumptions on which the proof of relativity rests. This interpretation will of course be rejected, and we come to the second. Suppose then that one of the bodies which are at rest relatively to the source of light begins to move towards it. Then the velocity of light relatively to it will become greater than its velocity relatively to the bodies that are still at rest relatively to the source.

[1] Prof. Broad in *Hibbert Journal*, April, 1920, pp. 427, 428.

For Einstein, though he rejects Newton's addition-formula for velocities, sets up another in its stead; when two velocities are added the result is something different from either, though not (as Newton said) the arithmetical sum of the two. Therefore the velocity of light relatively to two bodies, one moving towards the source of light, and the other at rest with respect to it, will be different. Thus the assumption on which the argument rests is inconsistent with the statement in the theory, that the velocity of light relatively to all bodies is unaffected by their motion.[1]

Let me take a further illustration of the inconsequence which seems to beset even the acutest thinkers when under the influence of the glamour of relativity. Einstein[2] makes the assumption that two points of a railway line have been struck by lightning, and asks whether the statement that the strokes were simultaneous has any meaning. The reader is supposed to reply that the meaning is clear, but that he would find it difficult to say whether the statement was true. Einstein is not satisfied with this answer. 'A concept does not exist for the physicist until the possibility of discovering in the concrete case whether the concept applies or not is given.' The question how you could possibly discover the applicability or non-applicability of a concept that does not exist for you either does not occur to Einstein, or is deemed unworthy of notice; and it is inferred that in order to have a conception of simultaneity at all we need such a definition of it that we can determine whether the lightning strokes were simultaneous. The definition proposed is that the strokes are simultaneous if they are perceived simultaneously by an observer placed midway and furnished with an apparatus (*e.g.*, two mirrors placed at right angles) which allows a simultaneous optical fixation of the points A and B which were struck. The definition is obviously circular, and it becomes clear that what Einstein is looking for is not a definition but a test, and a test not of simultaneity, but of the simultaneity of two events not directly observed; for the test evidently rests on the observer's immediate judgment of the simultaneity of two events in his own consciousness. Thus it is clear that we have a conception of simultaneity before we set up the criterion which according to Einstein first gives us that conception. And, further, it is clear that we mean the same thing by 'simultaneous,' whether we are speaking of events in our

[1] This is what is *said*; what is *meant* can surely only be that observers' estimates of its velocity are unaffected by their motion. But to distinguish the fact from the estimates of it is to give up relativity.

[2] *Über die spezielle und die allgemeine Relativitätstheorie*, p. 14.

own consciousness or of events without it, though for the application of the word in the latter case we need a criterion which we did not need before applying it in the former.

Einstein supposes the above criterion to be met by the following criticism: 'I cannot tell whether light propagates itself with the same velocity from A to M and from B to M unless I already have at my disposal the means of measuring time; the reasoning therefore is circular'. His reply is: 'My definition makes no assumption about light. The definition of simultaneity has only to be such that in every real case it enables us to decide empirically whether the concept to be defined is applicable. That light takes the same time to travel both these journeys is not an assumption about the physical nature of light, but a statement I am free to make in order to reach a definition of simultaneity.' In other words, we have a word 'simultaneity,' but we attach initially no meaning to it; we get tired of making this meaningless noise, and decide to attach some meaning to it, and a meaning such that in terms of it we shall be able to say of any two events that they are or that they are not simultaneous. The important thing is to make some decision, not to make the right decision; as the word, so far, means nothing, there is no right or wrong about it. We assume that light takes the same time to travel equal distances, but this is not to make any statement about the physical nature of light, since 'same time' is equally meaningless with 'simultaneous'. It is of course obvious that so long as we do not want to make a right decision, but merely some decision, the assumption that light takes twice as long to travel a certain distance west as to travel an equal distance east, or the assumption that all telegraph boys move with equal speed, would do just as well.

It is surely clear that Einstein's supposed reader was right in saying that he does attach a definite meaning to 'simultaneous,' but does not always know whether two events are simultaneous; and it is clear that if he is to use light signals as a test of this he must know whether light does travel equal distances in equal times, as a matter of hard fact and not as a matter of mere arbitrary use of language. It is surprising that scientists should allow themselves to be fobbed off with the latter, which is all that on his own showing Einstein has to offer. However much he may deny it, the statement that light takes the same time to travel equal distances is a statement about the nature of light.

Take, again, the argument by which he proves the relativity of simultaneity (p. 16 ff.). He propounds the question

whether events simultaneous in reference to the railway line are simultaneous in reference to a train moving along it. An observer on the line at M midway between A and B will judge the strokes of lightning simultaneous if the rays sent out from A and B at the time of the strokes reach him simultaneously. But an observer at M′, the point on the train which was opposite M when the strokes (as judged from the line) occurred, will (if the train is moving towards B) be nearer to B than to A before either ray reaches him; the ray from B will therefore reach him before that from A, and he will judge the stroke at B to have happened before that at A. Thus two events which are simultaneous relatively to the line are not simultaneous relatively to the train. Hence simultaneity is relative, and any two things which are in relative motion have separate times of their own. On this argument three comments may be made.

(1) The relativity, if relativity there be, is relativity to minds, not to bodies. Leave out the judgments formed by the two observers, and the bottom drops out of the argument. This is obscured by Einstein when he describes each *body* of reference as having its separate time. The theory is at bottom a form of the old philosophical doctrine of the relativity of our judgments to, their dependence on, the peculiarities of our own minds. The novel element in Einstein's theory is that the peculiarity of each mind on which he makes its judgments depend is its situation at a body which is in motion relatively to other bodies. The relativity is a relativity to bodies only as actual or possible situations of minds, or of the sense-organs used by minds.

(2) Not only are the 'local times' really judgments about time depending on the motion of the observer, but the discrepancy between the two observers' judgments can be removed. The observers have only to allow for their relative motion; they will then make the same judgment. To this the relativist will reply, 'that may be so in the illustration; we have there supposed the train to be in motion, and to be known to be in motion, relatively to the line; but in actual fact we are not in that position. No experiment has ever revealed whether the earth is moving through the ether, and if so, how fast. Therefore we do not know what allowance should be made for such motion; the only reasonable thing is to ignore it, to treat it as making no difference to the velocity of light relatively to us; events which are simultaneous to one observer will then necessarily be non-simultaneous to another, and simultaneity will necessarily be relative.' I think we must agree that we do not know whether or how fast we are

moving, and therefore do not know what allowance to make for such movement. But surely the reasonable attiude is, not to say that we are theoretically right in making no allowance, that the conflicting judgments which will follow if we make no allowance are all of them right, and that therefore the same two events are and are not simultaneous. The reasonable thing is to say 'I do not know how much allowance should be made for my motion, but as my velocity is probably very small in comparison with that of light it will for most purposes make no difference. I will therefore ignore it. Anyhow I am just as likely to be right as if I made some arbitrary allowance.' Of conflicting judgments about simultaneity, then, certainly all but one, and perhaps all, will be wrong, but we cannot know, where the conflict depends on the unknown velocity of the earth, which, if any, is right. This seems to be the moral to be drawn, and though it is not the moral drawn by relativists, we owe it to them that it has been forced on our attention.

(3) It is surely clear that Einstein's argument to show that the two observers will make conflicting judgments rests on the assumption that the rays from A and B either start definitely at the same time or definitely at different times. In other words it is on the basis of an unacknowledged belief in absolute time that his argument here is worked out, and apart from that belief nothing whatever could be asserted about the times at which the messages will reach M and M'.

The conclusion to be drawn appears to be that the belief in absolute space, absolute time, and absolute motion is not a mere prejudice of common sense, but something that necessarily underlies all our thought, and that the argument which tries to disprove them is assuming them all the time. For the mathematical genius which has worked out the relativist view of the world we who are not mathematicians can have nothing but the profoundest admiration, but the superstructure is worthless unless the foundations are well and truly laid in general thinking about motion, distance, and simultaneity ; and there are some of us who have no conviction that this has been done. Until we can be led to see our error, we are bound to think that the explanation of the Michelson-Morley and similar results is to be found in some theory not about space and time but about matter or ether, some explanation like that of Lorentz, which seems to us, though surprising enough, to contain nothing that we need have any difficulty in believing. Since its transformation-equations are identical with those of Einstein, I take it that Lorentz's theory will do all the work that Einstein's special

theory will do. The latter theory seems to rest on a fundamental confusion between facts and the estimates which different observers will form of them.

III. By C. D. Broad.

I shall deal first with the difficulties found by Mr. Ross in arguments that have been used for the special theory of relativity. I think that these difficulties rest mainly on misunderstandings, and that they can easily be removed by a little explanation.

(i) Mr. Ross regards it as a weakness that the constancy of the velocity of light should be the keystone of the special theory and yet be discarded in the general theory. There is no real difficulty here, when we remember the different subjects with which the two theories are concerned. The special theory explicitly confined itself to systems in uniform translational motion with respect to a Newtonian frame of reference. It did not profess to tell us what would happen if a system rotated with respect to such a frame or moved with an accelerated rectilinear motion with respect to it. Now the general theory professes to deal with *all* motions, no matter to what they may be relative or what may be their kinematic characteristics. There is nothing startling in the fact that a proposition which is true and important for a restricted class of motions should not be true of all motions whatever. Mr. Ross would not, I trow, feel any difficulty if he were told that certain phonetic laws are the keystone of the sound-changes in Teutonic languages, but that they are not true without modification when we take into account all Indo-European languages.

(ii) Mr. Ross blames relativists for not having exhausted all the possibilities of the older theory. On their own admission all that we directly know is that the earth and the stars move with respect to each other. If there be an ether this fact is quite compatible with the earth being at rest with respect to it. Now the results of the Michelson-Morley experiment are paradoxical only because the earth is assumed to move through the ether, not because it moves with respect to the stars. And the latter, we have seen, does not imply the former. Mr. Ross's alternative would split into two forms according as he holds: (*a*) that there is, or (*b*) that there is not relative motion between different parts of the ether. On the former alternative both the earth and the stars might be at rest relatively to the parts of the ether in

their immediate neighbourhoods. On the latter alternative the stars would have to be moving through the ether and to have the same velocity with respect to it as with respect to the earth. The former hypothesis has been tried, and is known to lead to conflicts with the facts about aberration. The latter, I think, is the one that Mr. Ross has in mind. It cannot be regarded as plausible to hold that the earth is the one body at rest in an ocean of stagnant ether, whilst the stars are all moving about in it. If the ether be a real physical substance pervading the whole universe, as those who take it seriously enough to entertain either of these alternatives must hold, this second alternative places our small planet in a strangely unique position. But apart from these *à priori* objections, the physical difficulties in any such view are colossal. To account for aberration we shall have to suppose that all the stars describe ellipses in the ether in the period of a year. These ellipses will have to be adjusted to each other in a very intimate way, for which the present theory supplies no explanation. Moreover, considering the extreme remoteness of many of the stars, the ellipses will be of gigantic size, and therefore the velocities with which the stars must move in order to describe them in a year will be stupendous—in some cases of the same order as that of light. Not only are the dynamical difficulties of supposing such large masses to be in such swift motion very great, but the shifting of the lines of the spectrum in light from such stars, due to the Döppler effect, would, I imagine, make stellar spectra utterly different from what they are found to be.

(iii) But Mr. Ross's main difficulty is that he thinks that relativists take absolute motion as a premise in their proofs of the relativity transformations, and that these results are then supposed by them to disprove absolute motion. Before considering in detail whether relativists actually do this we may point out what exactly would be the logical consequences of such procedure. If the observable facts and the assumption of absolute motion imply the relativity transformations, and these in turn imply the denial of absolute motion, it will follow that the facts and the assumption of absolute motion imply the denial of absolute motion. From this we *should* be justified in going on to deny absolute motion. But we should *not* be justified in taking the further step of asserting the theory of relativity. Thus, if the relativistic arguments were of the form which Mr. Ross believes, and if there were no internal fallacy in them, we should be justified in denying absolute motion but not in asserting the theory of relativity.

Actually, however, Mr. Ross is mistaken in thinking that relativists use the absolute theory as a premise to prove the theory of relativity. Let me take my own case, *e.g.*, as Mr. Ross accuses me of this procedure. For didactic purposes I started with the ordinary assumptions of absolute space, time, and motion, and an ether at rest in this space. I then drew a distinction between distances, time-lapses, etc., and our *measures* of these. And I showed that if we wanted to account for such facts as the Michelson-Morley on these assumptions we should have to assume certain physical changes in our rods and clocks when they moved through the ether. The results of these changes are summed up in the transformation equations, and at this stage these may be regarded as expressing the connexion between the distances and time-lapses which we should record if our system were at rest in the ether and those which we should record if we were moving through the ether with an uniform rectilinear velocity. At that stage I was not attempting to prove the *theory of relativity*, but only to prove that such and such relations must hold between our readings when we are in motion and the absolute magnitudes if the facts are to be squared with the *absolute theory*. The next stage is to reflect on these results. (*a*) We see that the physical processes needed to make the absolute theory square with the facts are unnatural in the last degree, and that they have neither the causes nor the consequences which such processes might be expected to have. (*b*) We notice that, since the result of the transformations is that the measured velocity of light will be the same for all systems in uniform rectilinear motion, we may just as well interpret the c of our formulæ as that relative velocity and drop all reference to the velocity of light with respect to the ether, which was its original meaning. (*c*) Next we notice that the form of the equations is such that the transformations from one system to another in uniform relative motion will be precisely the same as the transformations from a given system in motion to one at rest in the ether. We have merely to substitute everywhere in the formulæ the velocity of one system with respect to another for the velocity of a given system with respect to the ether. We can thus reinterpret the v of our formulæ provided we make a parallel reinterpretation of the x, y, z, and t. The v is now to stand for the velocity of one system as judged from a second, instead of the velocity of a single system with respect to the ether. The x, y, z, t are now to stand for the measures of length and time-lapses found by people on the second system, and the transformation equations give us the corresponding

measures of length and time-lapse found by people on the first system. Thus absolute motion and the ether have dropped out altogether, and we are left with equations connecting the measurements of two observers who contemplate the same events. Had absolute motion been a *premiss* for proving these equations, of course we should have no right to reject the premiss and hold that we had proved the equations. But the real position is that the evidence for the equations is simply and solely that they account for the facts. If there be absolute motion it must have such physical effects as to lead to these relations between the measures found by two observers in uniform relative motion, for these relations are found to be necessary to explain the facts. But on the one hand, if there be no such thing the relations will still hold. And, on the other, the facts that absolute motion in any case cannot be observed, that it cannot be inferred from its effects because these are such as never to show themselves, and that the effects which we should have to ascribe to it accord very ill with the rest of our knowledge of nature, strongly encourage us to try to dispense with it altogether.

(iv) The last point in Mr. Ross's paper on which I want to comment is his remarks on simultaneity. His view is that we all know what simultaneity means, and that it always means the same thing. Einstein gives a *test* for it in certain difficult cases, this is never a *definition*, and as such it may be right or wrong, while a definition could only be convenient or inconvenient. I agree in part with Mr. Ross here; but I do not think that the point at issue is so important as he makes out. Certainly I do not primarily *mean* by simultaneity anything to do with light signals. And I do mean *something* by it. But (*a*) I may mean something by a word and not know all that I mean by it. I may think it stands for an absolute term whilst it really stands for a relative one. I talk, for instance, of *the* colour of a piece of gold and only learn afterwards that the colour is not a property of the gold by itself, but is relative to the physical situation in which the gold is placed. Similarly the fact that I mean something by simultaneity, and think that it is an absolute term, is quite compatible with its really being relative to a co-ordinate system. I think the colour of gold to be non-relational because I tacitly assume certain familiar conditions of illumination which are normally fulfilled. In the same way I may fail to notice that simultaneity has an essential reference to a co-ordinate system because I habitually assume a certain familiar system. It does not seem to me that we start life with a clear enough knowledge of what precisely we do mean by

simultaneity to deny this off-hand. (*b*) Granted that we may mean something by a word without knowing with perfect definiteness what we do mean by it, and that this uncertainty allows the possibility of its standing for a relational term, I think Einstein is justified in assigning any meaning to it in doubtful cases which does not fall outside the range of variation of our meaning. He then naturally choses that particular meaning within this range which allows of a definite test and simplifies the statement of the laws of motion as much as possible. This is a general procedure in all sciences, and seems to me to be a perfectly legitimate one. We are not, as Mr. Ross thinks, claiming to give a perfectly arbitrary meaning to a previously meaningless noise; the noise has a restricted class of possible meanings, and we are choosing the most convenient and reasonable one within this range. (*c*) Lastly, if it be granted that relativity *to a co-ordinate system* falls within the range of possible meanings of simultaneity it follows that such relativity as is found need not be to *our minds* or our judgments, as Mr. Ross seems to think. And the fact that we are not dealing here with a relativity that merely refers to our minds and their judgments is proved by the fact that purely physical systems, such as spectroscopes or the moving liquid in Fresnel's experiment, themselves 'recognise' the relativity transformations.

I hold then that, even when we were confined to the special theory, we had good grounds for viewing it with great favour, and that we committed none of the fallacies of which Mr. Ross accuses us in our arguments for it. But I think the general theory is in an even stronger position than the special theory. Let me explain just what I mean by this. Mr. Ross says he will confine himself to the special theory, because, until one has convinced oneself of it, it is useless to worry about the more general one. This seems a reasonable attitude to take, and yet I believe that it unconsciously does an injustice to the theory of relativity. The general theory has in its favour all the arguments that favour the special one, and in addition, certain arguments which do not apply directly to the latter. These arguments consist in the extraordinary unification which it introduces into physics, and the way in which it removes that deplorable scandal which had always hung over the Newtonian laws of motion. The unification of course is that it binds together in a single whole Newton's two great achievements, the laws of motion and the law of gravitation, and connects the two previously independent notions of gravitational and inertial mass. The scandal was the necessity of a particular frame of

reference for Newton's laws. If you took this to be absolute space you had laws which were presumably discovered by observation, and intended for application to the empirical world; and yet they were stated in terms of entities which could neither be observed nor inferred. If you took the frame to be the fixed stars you felt that they were placed in an utterly unintelligible position of importance in nature. It seemed obvious that there must be some way of stating the laws of nature on the one hand entirely in terms of relative motions and positions, and on the other independently of some one special group of material objects such as the fixed stars. To have done this is the great service of the general theory and the overwhelming argument in its favour, to my mind.

To sum up as regards the evidence for the theory:—It seems to me that the general theory starts by shocking us through its unfamiliarity, but that the more we reflect on it and on the mass of perfectly gratuitous and essentially unverifiable assumptions involved in all the alternatives the more certain do we become that it, or something extremely like it, must be true. If men like Prof. Eddington or Prof. Lindemann, who have been constantly and successfully using the methods and results of the theory, were the only people to make the above statement, we might be inclined to discount it somewhat as expressing 'the bias of happy exercise'. But the fact that I am a mere philosopher, quite incapable of their mathematical and physical achievements, may at least serve to allay such suspicions when the statement comes from me.

I will conclude with some remarks on Prof. Eddington's most interesting theory as to the function of the mind in physics. I will not call them criticisms, but rather appeals to Prof. Eddington to clear up some places where his meaning seems to be doubtful. (i) He often speaks as if lengths, time-lapses, etc., were relations between Nature and the observer. He thus seems to make Nature simply the almost unknown referent of these and other relations. Would it not be nearer the truth to draw a much sharper distinction between the 'observer' in the sense of his body and his scientific instruments and the 'observer' in the sense of the observing mind? In the former sense the observer is part of nature, in the latter he is not. And we ought then to say that lengths, time-lapses, etc., are relations between one part of nature and another part of nature, and it is these relations —or the natural complexes related by them—which the mind of the physicist contemplates, measures, and describes. (ii)

I am not sure that Prof. Eddington does not state his selection theory in needlessly subjective terms. To take a crude illustration: Suppose that a number of dots were scattered about at random on a plane. Any three of them would form a triangle and any four of them would constitute a tetragon. The triangles and the tetragons are equally real, and equally parts of nature, and you could completely analyse nature into either. But, on the other hand, only a small number of the points, if any, might be at the corners of squares. Now let us suppose that both triangles and tetragons have properties corresponding to 'conservation'. Then the whole of nature could be analysed exhaustively into entities obeying laws of conservation. If, on the other hand, only squares had the property corresponding to conservation, then, however much the mind might be interested in conservation, it could not give an exhaustive account of nature in terms of conservative entities, and it might be the case that *nothing* in nature obeyed such laws. Now the question I want to ask Prof. Eddington is this. Can *any* four-dimensional manifold be exhaustively analysed into complexes having the property of conservation, as *any* set of points in a plane can be exhaustively analysed into triangles or tetragons? If so, of course, the fact that nature everywhere obeys laws of conservation is in no way due to the mind but to the properties of four-dimensional manifolds as such. The result would be that such laws are necessary in all possible four-dimensional worlds. If not, then the important question would be: Does the actual four-dimensional world in which we live admit of exhaustive analysis into subordinate complexes of this special kind? The fact that the mind happens to like such complexes would of course throw no light on this question. The fact, if it be a fact, that it neglects all other complexes and yet seems able to describe and deal with nature satisfactorily would suggest that probably this condition is pretty nearly fulfilled. For, if there be other complexes and we be so constituted that we neglect them, it does not follow that they will neglect us. And we should therefore expect to get into serious practical and theoretical difficulties if the bent of our mind caused us to ignore types of complex which are real parts of nature and cannot be analysed into the complexes of the types that we do notice.

Scientists generally and rightly neglect the existence of minds while going about their lawful business. When at a later stage minds are forced on their attention they tend to be embarrassed. If they be stupid they deny minds altogether, which seems to be the last asylum of the dogmatic biologist. If, like Prof. Eddington, they have too much sense

to do this, they are liable to go to the other extreme and, taking *omne ignotum pro magnifico*, to ascribe to minds powers and functions which they probably do not possess. I do not assert that Prof. Eddington has made this mistake but I have my suspicions.

IV. By F. A. Lindemann.

The difficulties of Mr. Ross seem to have been dealt with very completely by Mr. Broad so that I will confine myself to an attempt to restate the general case for Relativity in its simplest form in the hopes of providing a basis for discussion.

For this purpose I propose to examine the question why we study physics and attempt to establish the relation between physics and metaphysics. Then to state the impasse which led to the special theory of relativity, and finally to explain the essential difference between the general theory of relativity and the Newtonian point of view.

Mankind has evolved in the course of ages amidst hostile surroundings from the position of one of the minor fauna to that of unquestioned master. Whatever may be the reason for this we cannot therefore be surprised if man has many attributes of considerable survival value. There can be little doubt that one of the most valuable characteristics from the survival standpoint would be the faculty of forseeing future events, and it is not to be wondered at therefore that those races and men who have survived have an innate tendency, possibly strengthened by tradition, to seek to correlate events and establish relations between phenomena, which will enable them to predict subsequent happenings from observed data. The more easily such relations or laws are assimilated and applied, the simpler they will appear, hence the human mind, being what it is, always tends to accept the simplest laws consistent with observed facts.

Physical laws, and probably all laws, are based on observed phenomena. In order to establish a law a physicist observes a phenomenon under various conditions, formulates a hypothesis to account for the results, extrapolates new consequences of his hypothesis, tests these empirically, if necessary modifies his hypothesis, and so on. In this way, by a series of successive approximations he arrives at a rule or law or formula which is valid for all his experiments, which should be valid for all experiments carried out under conditions intermediate between those actually tried, and which is often valid when extrapolated for a considerable distance beyond

the observed instances. A man with this physical habit of mind may occasionally be misled by insufficient data, but when this happens his constant empirical checks inevitably show him his error and cause him to recast his theory.

We may contrast with the physical habit of mind, which we all have to a greater or less extent, what may perhaps, for want of a better term, be called the strictly logical habit of mind which occasionally survives in universities and other secluded regions. A logician of this type refuses, at any rate in theory, to believe that it is possible to learn by experience or extrapolate from observed repetitions. In his view the fact that the sun has risen a million times in succession does not provide any reason for believing it will rise again. He says one must either know or admit ignorance, and deplores our tendency to simple extrapolation. One can imagine occasions upon which the logician might score at the expense of the physicist who frankly admits that he does not know, but finds it pays to extrapolate, *e.g.*, at Monte Carlo, where the logician should never even be tempted to invent a system; but in the infinitely more numerous and important affairs of daily life the physicist would survive whilst the logician would perish. Still some individuals with a tendency to this type of logic, or better still some chromosomes or chromidiae, which predispose an individual to such a dangerous habit of mind, have managed to survive. They have done this by making a new and perfectly undemonstrable assumption, namely, that certain things or laws are "self-evident".

Making such an additional assumption of course complicates things and thereby diminishes the probability of the survival of the individual characteristic; but it need not diminish it very materially if the "self-evident" truths are judiciously selected. Clearly any member of the congress who inclines to the "logical" point of view has survived and he would not be amongst us to-day unless his self-evident laws approximated to our physical laws. The danger of course lies in the fact that a "self-evident" law, once it rises above the level of a mere definition or tautology, is always liable to be upset by new experimental evidence.

Now the law may be "upset" in two ways, so different quantitatively that they may almost be considered qualitatively different, and it is this difference which, in my opinion, forms the only distinction between physical and metaphysical statements. As an instance of a physical statement, than which few things could seem more "self-evident," we may instance the claim "that water is continuous and homogeneous".

This involves the claim that it would be possible in principle to subdivide a drop of water into an infinite number of particles, each of which would have the properties of water. We have every ground for believing that if it were possible to cut a drop into eight equal parts by three perpendicular cuts, and repeat this process some twenty-five times, we should arrive at something very different to water, namely, hydrogen and oxygen. To refuse to believe this because the continuity of water appears self-evident would practically amount to repudiating the whole edifice of modern chemistry and physics. The number and complication of supplementary hypotheses that would have to be made in order to take account of observed facts, would be so enormous that a physicist must refuse to contemplate such an alternative.

As an instance of a self-evident truth of the second type we may take the geocentric system of cosmogony "self-evident" if anything can be. Why was this system superseded by the heliocentric system against the tradition of centuries, the authority of religion, and the efforts of the secular powers? Only because the Copernican system is simpler. Both systems are capable of accounting for all the facts, and it is really surprising how quickly the simpler theory supplanted the more complex merely by virtue of its simplicity against all the weight of prejudice, and in spite of its "self-evident absurdity". Its acceptance is an inspiring proof of the innate tendency of the human mind to assume that which is simple and manageable, and which therefore tends to the preservation of the race.

The difference between the two examples is clearly one of degree rather than of type, but the difference of degree is enormous. The geocentric system could be worked, though with more effort than the heliocentric. The denial of the discrete nature of matter would probably involve complications which would transcend the capabilities of the human mind. From this point of view, therefore, a physical statement is one which it is impossible to give up without revolutioning science, whereas a metaphysical statement is one which forms a convenient basis for describing phenomena, but which has scarcely more importance intrinsically than has the choice of co-ordinates in geometry.

It is difficult, if not impossible, to say just how much gain in simplicity is necessary in order to justify us in believing that a certain theory is intrinsically true rather than merely convenient. Here again we must trust to the inherited tendency of the mind to draw the line. But most people will agree that there is a vast difference between assuming, say,

that the earth is round, because this is the simplest way of accounting for the observed facts, and assuming that the earth is divided up into parts by lines of latitude and longitude because these provide the easiest way of specifying a point on the earth's surface.

In my opinion the Principle of Relativity is what has been defined above as a metaphysical principle, and we are now in a similar position in respect to the theory of Einstein that Galileo occupied with regard to the cosmogony of Copernicus. We find it hard to give up our prejudices in favour of a strict distinction between space co-ordinates and time co-ordinates, and in favour of a strictly Euclidean space merely because it simplifies the laws of physics. To do so requires a mental effort which, in the opinion of some, is not compensated by the gain in simplicity which results. But our notions of space and time are essentially metaphysical conceptions, and as such are clearly merely a matter of convenience or even of taste. The older generation may, therefore, be justified in refusing to accept the new doctrine and sticking to its "self-evident" truths at the expense of simplicity, but as in the astronomical parallel we must look for progress and discovery to those whose elasticity of mind enables them to make themselves familiar with the new point of view. Neither standpoint can be said to be right or wrong since either enables us to represent the facts adequately, in fact, as mentioned above, the difference is not so very much greater than one of a choice which co-ordinates one will adopt. But the old theory panders to outworn prejudices at the expense of simplicity, whilst the new will probably seem as obvious and natural in a generation as the Copernican theory does to us to-day. Just as the change from the geocentric to the heliocentric cosmogony denoted a momentous emancipation of the human intellect, so does a grasp of the theory of relativity enable us to look with a much wider and broader view on the systems and philosophies of the past.

As a basis for discussion it may be worth while to set down once again in the baldest form the experimental facts which seem to show the desirability of reconsidering our opinions, firstly, as to the sharp distinction between space and time co-ordinates (special theory of relativity) and secondly, as to whether space, or if the first thesis be accepted the space-time manifold, is Euclidean (generalised theory of relativity).

Perhaps a brief, almost historical, analogy may be interposed, which illustrates the situation which led up to the special theory of relativity. Let us picture a primitive community in which height is rigorously distinguished from

length and breadth. This distinction might well appear fundamental since work must be done in order to raise an object, whereas it can be moved in a horizontal plane without effort. As long as the members of the community believed the earth to be flat, they would consider it just as easy to distinguish height from the horizontal dimensions as we tend to think it is to distinguish time from the spatial dimensions.

Now suppose an observer on the top of a tower observed a distant tower with a theodolite. If both towers were of equal height when measured in the usual way by means of a plumb line and a foot rule, our observer would expect to find that his theodolite was level. On account of what we call the depression of the horizon he would of course find that he was obliged to point slightly downwards. At first he might attribute this to some peculiarity of the air, but when he found the same phenomenon whichever eminence he ascended, he would be forced to seek a more general explanation. The first that would occur to him would probably correspond to the Lorentz-Fitzgerald contraction. He might say that the mere fact of ascending distorts the scale of the theodolite and elaborate a consistent but complicated system on these lines. A really clear thinker, who would free himself from prejudice, might however proceed as follows. He would say, this distant tower is lower than mine for my theodolite measures its height. Therefore when I drop a plumb-line from it and measure the length the plumb-line cannot be parallel to my plumb-line in my observatory. But my observatory is in no way pre-eminent above any other spot in the world, therefore I cannot say my plumb-line is truly vertical and measures height, whereas all others are deflected towards me. Hence the direction which we call height must vary according to which part of the earth's surface we are at and what I call height must appear to be composed of height and horizontal distance, for anybody else and *vice versa*. The simplest way in which I can express this is to say that the surface, which I have been taught to call plane is curved and to say that height is the direction normal to this surface.

It is not necessary to picture the scepticism with which such an argument would be met in detail, how the unfortunate originator of the theory would be told that everybody knew what height was and that to try and compound height and horizontal distance was as foolish as to mix space and time, and how he would be finally overwhelmed by some philosopher pointing out that his theory logically involved the possibility of Antipodeans. Such a description would apply to events even yet too recent to be altogether pleasant. But

though the analogy is obviously imperfect the results of the Michelson-Morley experiment put us in a very similar predicament to that pictured above.

Unless we assume that the earth is altogether pre-eminent in the universe and that the Michelson-Morley experiment, which yielded a purely negative result on the earth would show a positive result on any and every other planet, we can describe it, making use of Majoranas' results, in the following way.

If two observers moving past one another sent out a light signal at the moment they are in contact this signal will spread out as a shell of light. Although they are moving away from one another, each observer will find as the result of the most accurate measurements that he is and continues to be at the centre of the expanding shell of light.

If the shell of light has objective reality there is only one explanation for this, namely, that the standards of length and time used by the two observers, which agree when they are at rest relatively to one another, do not agree when they are not at rest relatively to one another. If the two observers A and B are moving with the relative velocity V it is easy to specify the exact change of the units of length and time which would lead them both to conclude, as really happens, that they are at the centre of a spherical shell of light expanding at velocity C. This change is expressed uniquely by the Lorentz transformations and is such that A considers that B's measurements of length involve what he, A, calls length and time, whilst B considers that A's measurements of length involve what he, B, calls length and time. The same holds good for measurement of time. Each observer finds that the other observer must be measuring a quantity involving both time and length when he thinks he is measuring time.

Now no observer is pre-eminent above any other and therefore neither can claim that he is right and that the other is wrong. Each considers he is separating length and time in the one obvious unique way and yet neither is separating them from the other's point of view. The obvious conclusion is that they are both viewing the same event in a four-dimensional space-time manifold from a slightly different angle. This is precisely what the equations of transformation which may be found as shown above indicate to the mathematicians.

An event implies both spatial and time relations and in order to describe it we introduce space and time co-ordinates and represent it in a four-dimensional manifold. The achieve-

ment of the special theory of relativity consists in having shown that there is no unique way of separating space and time co-ordinates but that observers moving relatively to one another will separate them in different ways. Objective reality belongs to the event, its description in terms of space and time varies and depends upon the observer: space and time are thus relegated to the secondary role of convenient co-ordinates personal to the observer which he uses in order to describe events.

The main philosophic advance to be claimed for the generalised theory is to the emphasis it has laid upon the fact that the conceptions we choose to form about geometry in the four-dimensional space-time manifold which forms our universe are entirely arbitrary. Again it is purely a matter of convenience which geometry we adopt.

There is no meaning in saying any particular geometry is true or false, that space is Euclidean or non-Euclidean, homaloidal or not, for space without objects is inconceivable. Therefore any statement about space really consists in a statement about objects, preferably solid objects. It is readily seen that here a wide range is open. Thus if anybody chooses to affirm, for instance, that the linear dimensions of all objects in a room contract to one-half when turned from a N.S. direction to an E.W. direction, it is impossible to prove him to be wrong. Clearly his measuring rod will contract by the same amount so that the fact that the measured length does not alter proves nothing. The only objection to such a scheme is that it involves complicated laws of physics.

Take, for instance, the elementary mathematical treatment of a game of billiards on these assumptions. Two balls moving E.W. and W.E. may be made to collide at such an angle that their directions are changed to N.S. and S.N. respectively. Neglecting friction their speeds appear to remain the same. But if we assume that the E.W. dimensions are one-half of the N.S. dimensions the speeds, which appear unchanged, must really be doubled and the kinetic energy must have increased to four times its original amount. If we desire to make the above assumption about our geometry, or space, or perhaps best of all about the properties of solids, and yet retain the laws of the conservation of energy and momentum we can only do so by making special assumptions, *e.g.*, that E.W. kinetic energy is four times as great as N.S. kinetic energy and E.W. momentum twice as great as N.S. momentum. Similar arbitrary assumptions would be required in order to account for other phenomena, but there is no doubt that a consistent system of laws could be evolved

to fit an anisotropic space. The objection is, of course, that such a system would be very much more complicated than the system we use. In view of our innate tendency to adopt the easiest and simplest system therefore we usually assume space to be homaloidal.

For the same reasons we have hitherto assumed space to be Euclidean, namely, because this appeared to lead to simple and convenient laws of physics. It was Einstein who first pointed out that even simpler laws result if we give up this assumption which long usage has rendered almost a necessity of thought to some minds. The simplification is perhaps best seen if one tabulates the postulates necessary to account for observed facts in gravitational physics on the bases of Newton and of Einstein.

From the absolutist point of view we must assume:—

1. That bodies unaffected by other bodies follow the shortest paths, *i.e.*, that their four-dimensional world lines are unique.
2. That space is everywhere Euclidean.
3. That bodies or energies attract one another with a force proportional to the product of their masses.
4. That this force varies inversely as the square of the distance.
5. That a quasi-magnetic force acts upon bodies or energies moving relatively to one another.

From the relativist point of view we must assume:—

1. That the four-dimensional world lines of bodies or energies are unique.
2. That the curvature of space is proportional to the mass.
3. That it is inversely proportional to the distance.

The absolutist system introduces a mysterious entity called force and requires five assumptions at least. The relativist system yields all the same results with but three assumptions. The latter, therefore, appears preferable, but to say that one assumption is true and the other false would be just as meaningless as to say that space is or is not homaloidal. Either point of view is perfectly justified, but the one appears simpler, and, therefore, more convenient than the other. It would be unwise, though nobody could say it was wrong, to attempt to use Cartesian rather than polar co-ordinates in discussing curves such as spirals. If a mathematician existed who had never studied trigonometry or heard of polar co-ordinates, he might consider it better to treat the problem in this way, in spite of the complication, rather than make the mental effort necessary in order to familiarise himself with a new world of sines and radii vectores.

No man can estimate his neighbour's mental elasticity, and no man, therefore, has the right to condem another who refuses to embark upon an adventure for which he must dispense with the sword of self-evidence and the armour of prejudice, in which most of us are entrusted, and rely upon forging new weapons as he goes along. Each man must be the judge of his own limitations. But there seems little doubt that the future will belong to those who are able to realise when their mental accoutrement has become so unyielding as to be more of a hindrance than a help, and who have the courage and initiative to cast it aside and adopt new methods rather than wait until their own have been superseded.

III.—DO WE KNOW OTHER MINDS MEDIATELY OR IMMEDIATELY?[1]

By Joshua C. Gregory.

A little oil, when shaken vigorously with water, is dispersed through it in separate droplets. So our human minds appear to be dispersed as separate centres of consciousness through a continuous material world. To vary the metaphor, they seem to be scattered through the world of space and matter like islands in an archipelago. These attempts at visual representation, inadequate and even misleading though they may be, assist a mental grip on two ways of conceiving the possibilities of communication between mind and mind. As two droplets of oil, though separated by water, can draw one another, so two minds may communicate directly, without assistance or hindrance from the medium in which they are dispersed. The first settlers in the Ægean could only communicate between their islands by raft or boat. As the sea, which separates islands, also provides a connexion, so the material world may permit communion between minds.

Minds do communicate via the material world. Language, including in its widest sense the whole range of significant action from a faint bodily tremor to the most elaborate speech or writing, uses this instrument. Every human body is elaborately equipped for seeing, hearing, touching, or smelling, and through these senses the actions of other human bodies are perceived; it is also elaborately equipped for actions or movements that can be perceived through the senses of other bodies. Each human mind is intimately connected with such a body, which is a specially and highly organised part of the material world. The extraordinary complexity of these mediums of communication between mind and mind suggests

[1] A criticism of Mrs. Duddington's article in the *Proceedings of the Aristotelian Society for* 1918-19, on "Our Knowledge of Other Minds". Mrs. Duddington infers from neo-realistic principles that we know one another's minds as directly and immediately as we know physical things. She attempts to criticise away "the usual psychological doctrine" that minds know one another indirectly. This "usual psychological doctrine" is here shown to be adequate.

that minds are confined to this method of intercourse and thus forced to organise it to the utmost. This hint is so far confirmed by experience and reflexion that in traditional psychological doctrine minds only become aware of one another by indirect inference from bodily actions.

This traditional doctrine may simply have succumbed to the temptation of the apparently obvious. Many things seem obvious up to a certain point; then obviousness becomes doubt and doubt may become denial. It may be long before doubt can seriously disturb the persistent enticement of a broad apparent obviousness, and it may be so with the belief that we can only know one another's minds by observing one another's bodies. Remembering that this belief may seem obvious and yet be false, it is first necessary to understand why it does seem so obvious that mind can only know mind through bodies, connected in their turn by the physical world. A wave of the hand seen by an eye because light passes between the two informs one mind of the gladness of another: this seems to be typical of the sole method by which minds communicate.

The hands of any person, the boots he wears and the pen he handles are open to public inspection; the thoughts passing through his mind are not. He can, by speaking or writing, tell his fellows what these thoughts are or were. In speaking he uses movements of his body, and the air, and thus appeals through the bodily modifications involved in the hearing of his auditors to intimate these thoughts. When he writes them down the visual senses of his audience receive his message transmitted via pen, paper and ink—all parts of the material world—from movements of his hand. The communication between mind and mind of complex trains of reasoning or of thought in mass seems to be essentially accomplished by a physical route between them and to depend for that accomplishment upon the establishment of such a route. The steady elaboration of speech and writing, by opening more freely the physical routes of communication between minds, as rail or motor allows freer access from town to town, forcibly impresses the conviction that minds know, and can only know, one another indirectly through the material world in which they appear to be separated centres. The curt symbolism of developed language, so quickening to intercourse, emphasises the mediation of the physical world in mental intercommunication.

Toothaches, loves, angers, desires, or resolves, seem to be as concealed from public inspection as the most abstract thoughts. They too can become known through speech and

writing. Emotions like anger or fear usually lie more open to view because they more spontaneously express themselves in characteristic gesture or action. The dependence of the inspecting mind upon information received from the mind it inspects through the actions of the bodies' they inhabit becomes evident when it is deprived of these indexes to conscious life. A statue can express fear if it be cast in the attitude and expression associated with that emotion. It is tied to this one expression because it cannot alter to the attitude and expression associated with anger or joy or love. It may be so neutrally cast that it suggests virtually no mental state at all. As a human being approaches the immobility of a statue, his thoughts and feelings retire from the view of others: it becomes less and less possible to discover whether he is angry or pleased or in pain. If he lie paralysed by a "stroke" his friends cannot be certain whether he recognises them, whether he is suffering, even whether he is at all conscious of his surroundings. In such tense moments we seem to realise that we can only know one another's minds by observing one another's bodies. Death has always produced the conviction that the soul has fled or that the dead man is no longer conscious, because the body gives no hint of thought, affection, or recognition.

Thus every hint we receive, whether it be accepted as mere hint or regarded as a positive declaration, about the thoughts or feelings or resolves of others seems to originate in significant movements of their bodies. Spoken and written words do not habitually remind us of the bodily movements of mouth or hand behind them, we also think less of the gesture than of the emotion it signifies ; but, ultimately, every intimation received by one mind from another appears to be open to inspection only up to some movement in the body of the latter. Behind these movements, open to inspection in principle if not always in fact, lie the *inferred* thoughts, feelings and mental states and processes in all their infinite variety which are intimated by these movements. This inferred knowledge that other minds are angry or happy or thinking about their "knowledge of other minds" seems also to depend upon our own private experiences of anger or other mental conditions. We can know, to put it shortly, that others are angry because we have been angry ourselves and have expressed our anger in similar movements. Our dependence for our knowledge of other minds upon their similarity to our own and upon their expression through similar actions in similar bodies forces itself upon attention when we attempt to understand the minds of beings differing from

us in conscious life and in bodily organisation. McCabe, in his *Evolution of Mind*, affirms that there is no need to admit consciousness at all in the animal world as far up as the wasps and bees. His denial is significant because it might be true and because it is impossible to refute. We are less certain that he is wrong in doubting whether even birds are conscious than we are that he would be wrong in denying consciousness to Australian Aboriginees. We suspect that birds have pleasures just as we have because they seem to enjoy worms as we enjoy pancakes; we cannot entirely remove McCabes' doubts because birds are so different from ourselves. Our conviction that Australian Aboriginees have minds essentially like our own seems to depend upon their closer resemblance to ourselves. If we were not dependent for our knowledge of other's mental processes on their resemblance to our own and on their expression through movements similar to ours in bodies like our bodies, we should not expect to experience such serious difficulties as we do actually experience in determining whether humble organisms like paramecia have any consciousness at all. If Mrs. Duddington were right in claiming that "Our knowledge of other minds is as direct and immediate as our knowledge of physical things"[1] why should McDougall be compelled to an attempt to deduce consciousness in amœbæ from the tactics employed, so graphically described by Jennings,[2] when a big amœba chased a small one?[3] Why should we be uncertain whether "the loves of the plants" be only poetic fictions or be unable to deny that a plant turns to the sun to enjoy its light? If we could know other minds directly and immediately we should be able to disregard their unlikeness to ourselves in structure and habit and realise whether they had consciousness or not.

The dependence of our knowledge of other minds upon private experience appears in the failures of human beings to understand one another. Little children cannot understand all the motives and thoughts of their elders because their own little private experiences must first be widened. The little girl who tends her baby brother may perhaps receive a hint of parental solicitude; no child, it seems impossible to doubt, can understand the adult attitude towards itself until it has in its maturer years realised how childish naïveté, freshness, imperfect apprehension of life's significances and need of protection appeal to those who have left child-

[1] "Our Knowledge of Other Minds," *Proc. Arist. Soc.*, 1918-19.
[2] Behaviour of the lower organisms. [3] Body and Mind.

hood far behind. Differing interests raise misunderstandings between men or prevent them from understanding one another; the pigmy and the giant seem to belong to different worlds; men of differing speech begin their understanding of one another in the most fundamental parts of life—just at those points where common feelings and common modes of expression provide a basis of inference. A child can see that his father is angry: he too has been angry; he cannot understand his father's interest in politics. A savage can understand at once that the explorer who has just landed is hungry or friendly: he has been hungry or friendly himself; he is confined by dissimilarity of experience to an imperfect comprehension of the new mind that has come within his ken.

Our knowledge of other minds seems to be the inverse of our knowledge of physical objects. To know that other minds are angry or can be angry we must have been angry ourselves. We can apprehend the hardness of objects without being hard ourselves or perceive colours without being similarly coloured. The community of nature that seems necessary for apprehending minds and unnecessary for apprehending physical objects appears to be connected with an indirect mode of apprehension that contrasts with the direct immediacy seemingly characteristic of sense-perception.

Protests are expected against believing that minds can only know one another through a physical medium, and protests have been strongly made. Fechner thought that the very nature and being of spirits ought to bring them face to face. F. W. H. Myers compared the direct telepathic action of mind on mind to the pervading gravitational attraction between all particles of matter—minds may be separated centres like the oil droplets dispersed through water, but they can act on one another directly as two oil globules pull at one another independently of the water between them. These protests come down from above, but protest also springs directly from the belief itself in the inferential nature of our knowledge of other minds. We are so certain that other minds exist; we are so certain that they resemble our own; we are so certain that they feel pain, evince anger, experience joy just as we do ourselves; so certain they see mountain, moor and flood, and so certain that they have thoughts like our own thoughts. A complex analogical inference seems quite an inadequate support for such certainty. If we do compare the behaviour of other bodies with our own, and infer from our own mental states behind our own bodily actions that similar minds are behind the similar bodily actions of others, we succeed in imparting to this inference an absolute-

ness of belief virtually unattainable in any other inference. We seem wilfully to insert a paradox in the very heart of our certainty if we persist in believing that one mind can only know another indirectly through body and the material world.

The doctrine of indirect physically mediated intercourse between minds must be thoroughly explored to determine whether it can remain unimpaired by critical analysis. Such exploration is demanded by those who discover a conflict between this doctrine and fundamental principles of their own. If telepathy be true, direct knowing between mind and mind, we are not confined to observing one another's bodies for knowledge of one another's minds, though we may have dropped into the habit of depending on this method. Mrs. Duddington has been compelled to criticise the doctrine of dependence on physical mediation by deductions from neo-realistic principles. These principles converge on the conclusion that this dependence is neither absolute nor, at bottom, essential. The success or non-success of her criticism is thus widely significant. Her success would support the neo-realistic movement; her non-success would supply a corrective to it. Now, if her criticism is criticised in its turn, it seems clear that she has not succeeded.

Children rapidly realise that they are surrounded by other minds. If they reach this conclusion by the inferential route, they perform, Mrs. Duddington urges, a miracle of analogical inference. She depends, in endeavouring to force this concession upon us, on a misrepresentation of the nature of inference. Adults infer from bodily expressions to minds behind them so habitually that they are unconscious of drawing any inference—they seem to recognise suffering directly, because they pass so promptly from its bodily indications to the pain they intimate. Mrs. Duddington ignores some patent facts of experience when she argues that even if children drop very quickly into this unconscious, habitual, inferential method they must have passed through a period of formation when they explicitly argued: we cry when we feel pain; those children are crying; therefore they feel pain. Explicit conscious inference is the genetic successor, not the predecessor, of implicit unconscious inference. Children learn to *see* that stones are hard. This is inference, for hardness, which cannot be seen, is inferred from a stony look. Such inferences, spontaneously, unconsciously, implicitly springing from experience are the foundation of all mental life. One first office of consciousness is to interpret the present situation through past experiences.

These past experiences interpret the present situation *for* consciousness, both in the evolutionary development of life and in the development of the human individual, before the mind learns to refer, consciously, deliberately and explicitly to its past in order to deduce from it and establish logical canons for its deductions. Inference is like walking or speaking, like all perception, thinking or imagining: it is done before it is realised or brought under consciously realised conceptions. The more fundamental the inference, the more inevitable its original implicitness. The child learns from its own pain, pleasure or anger associated with bodily manifestations to perceive from similar bodily manifestations the possession by other minds of similar feelings or emotions in the same spontaneous way as it learns its inability to touch an object that looks far away.

A similar precedence of implicitness over explicit thought disposes of Mrs. Duddington's criticism that there is no reason for believing in the priority of the awareness of our own mental life to our awareness of the mental life of others. Explicit logical exposition begins with the percipient's own conscious life, proceeds through his own bodily manifestations to those of others and ends in the conscious life behind the last. Logical exposition is no direct translation of psychological genesis. The child acts and thinks like a self before it knows that it is one; it responds also to other persons as if they were persons before it conceives them as selves. Its own conscious experience, its own bodily habits and the impressions made upon it by other people's behaviour, organise its own actions and sense of life into a complex of reactions, physical and mental. The ultimate recognition of its private self among other selves depends, among other things, upon the direction of attention and the flow of interest. The organism faces outwards, with its mental no less than with its bodily eye: interests come from the outside and attention sallies to meet them. Mrs. Duddington may affirm rightly that the *idea* of the *other* self comes first, alike in primitive man and in children; she deduces wrongly if she supposes the priority of this explicit affirmation to intimate a priority of implicit apprehension. Psychologists, she remarks, fear questions about the age when we escape from solipsism by making our momentous inference. This "momentous inference" is continuously manufactured from the beginning of experience. Solipsism arrived late in philosophy because we think about things long before we think about our thinking. None the less our thinking about things is as original for us as the things we think about. The child defers re-

cognition of its dependence on its own conscious experiences and on the inferential nexus between mind and mind provided by bodily actions; but deferred recognition is no disproof of existence.

Mrs. Duddington calls in Lipps as assistant critic. An observed analogy, such as is involved in physically mediated knowledge between minds, implies, according to this psychologist, remembrance of past experiences. If she means that we ought to remember our childish analogical arguments from our own selves to the existence or nature of other selves she is again misrepresenting a spontaneous movement of thought as a formal, explicit, logical procedure. We do not remember how we connected a stony look with the hardness we infer from it. It requires reflexion to discover the element of inference in all our perception which was spontaneously or unconsciously wrought in by experience. Memory is primarily a reaction to, or spontaneous illumination of, a present situation through tendencies impressed by past experiences. It is only secondarily a deliberate, conscious reference to these. Hens expect food when they see their owner with a tin because they have been previously fed on like occasions. Their expectancy could be generated from previous experiences without their reinstatement in recollection or without any capacity for such reinstatement. The child does not deliberately remember that he laughed when he was pleased and deliberately infer from the laughter of his mother that she too is happy. He spontaneously apprehends his mother's pleasure from her laughter because primary, unconsciously acting memory connects the present situation with past experiences. The mind connects experiences into realisations long before it becomes conscious of these connexions or attempts to make them deliberately.

Mrs. Duddington adopts another criticism from Lipps. The percipient's view of other people's behaviour differs from his view of his own: he sees the one and feels the other. But surely a child knows that he tries to escape when he is frightened and can see that others try to escape in the same way? We certainly do learn to understand that the movements of others which we see are the same as our own movements which we appreciate mainly from sensations in our muscles, tendons, joints and the like as we make them. We make these fundamental connexions between our own movements as we feel or partially see them and the movements of others which we see, as we make all our fundamental connexions, unconsciously, spontaneously and implicitly. Lipp's comment

complicates the essentially inferential process of knowing one another's minds, it does not expose it as a fallacy.

Mrs. Duddington calls Lossky as a witness to the infection of every analogical argument by dubiety. It is true that the conclusions of most analogical inferences are only probable, though they may be very probable. Our supreme faith that other minds like ourselves exist seems, however, to have a special reason. We cannot escape from belief in the external world because we have always to adjust ourselves to it. A precisely analogous adjustment to other minds is constantly required of us. It is impossible to steal as if there were no policemen, impossible to telephone or go to church or read articles as if no other minds like our own existed. Since their presence is forced upon us by their actions it is consistent to suppose that these actions lead us to recognise it. The external world may not appear to us as it really is, for its intimations are received by minds that are not external worlds. These may misunderstand what is unlike them because they have not in themselves what they seek to discover. In knowing other minds we do discover what is in ourselves. Our certainty that other minds exist and that they resemble our own is derived from our most certain knowledge, however it be explained, that we do love, hate, think and reason.

Mrs. Duddington gets into still deeper waters when she insists that if a child can become aware of living things it can "contemplate," or apprehend directly, both the physical and mental aspects of a complex reality. She is commenting on Prof. Laird. Prof. Laird assumes that the child first distinguishes responsive from unresponsive beings; then by gradual unconscious logic it compares these responsive beings with itself. A baby knows the difference between mother and perambulator before it knows what the difference is; the child is aware of minds before it knows they are minds. The behaviour of living things, especially of conscious beings and most especially of human beings, is enough to impress upon the child their difference from inanimate things. Stones do not wriggle like worms and perambulators do not cuddle or lift or slap like mothers. It is quite gratuitous to suppose, as apparently Mrs. Duddington does suppose, that the infant perceives from the start the life in the worm or the mind in the mother that behaves so differently from the perambulator which she wheels. The responsive behaviour of the mother, surrounding the infant with tendance, singles her out uniquely, and singles her out uniquely for ultimate recognition as a mind when the infant's experience qualifies it for this spontaneous recognition.

We are rapidly aware of suffering, joy or affection in other minds because we are so familiar with personal behaviour. Mrs. Duddington seems suspiciously near quibbling when she argues that no introspection will "detect the slightest time-interval between our perception of a person's tears . . . and our awareness of his grief". Would it detect the "slightest time-interval" between hearing the words of a speech and appreciating their meaning? When the sentence is given the meaning is given. If we read gesture even more rapidly than we read print it is because we are so sensitive to the cues of personal behaviour. Human intentions are sometimes doubtful, just as the meanings of sentences are sometimes doubtful. In observing a gesture from a distance it is possible to be in doubt and is it certain that introspection would not then reveal the slightest time-interval between noting a distant wave and inferring that some one was afraid? If it be true that "The physical and the mental sides of the complex before us are apprehended together at one and the same moment of time, and they stand on the same level of psychological certainty," our ability to know a person's mind and to perceive what his gestures are vary in a remarkably parallel manner. Much apparent marvel disappears from the rapidity and certainty in our apprehension of other minds when we remember how the totality of our experience co-operates in that apprehension: context illuminates quickly and vividly. We know that most people are getting hungry at twelve o'clock; if our elderly neighbour runs out of his gate we are prompted by realising that business men catch trains; a frightened child and an inquiring bull-dog need no special immediate apprehension of the mental side of the "complex before us". Situations are constantly illuminated by past experience as pressing a switch lightens a dark room. How rapidly we dodge when a motor-horn sounds or realise from a whistle that we are late for our train! We are familiar with situations, we are familiar with minds, we are constantly watching their expression in bodily behaviour: there is nothing miraculous, unless in the sense that anything is miraculous, in our rapid and, on the whole, sure knowledge of how minds feel or think.

Mrs. Duddington's path of unsuccessful criticism is also strewn with some curious incidental deductions. We are directly acquainted with minds but cannot perceive them alone because they are always connected with bodies. There is some plausibility here, though we do perceive dead bodies alone. If habitual conjunction prevents us from perceiving minds apart from their bodies, in a dark room, for instance,

if we have no cue to their feelings or thoughts, it might be expected to preclude us from perceiving bodies without minds. All theories of direct acquaintance or action between minds have to assume that this immediacy is habitually dropped in favour of the mediate route through the physical world: the habit of accepting bodily actions as signs of inner states represses the method of immediate apprehension. Mrs. Duddington recognises that in practice "the more a mind 'withdraws into itself' and shrinks from attracting the notice of others, the more difficult it becomes for outsiders to become aware even of the emotional parts of it". No adequate reason for this is apparent, if it be true that the mind is originally endowed with the capacity of immediately apprehending other minds. Men have as much interest in their fellows' intentions as they have in external objects. If the mind have a power of perceiving minds analogous to its power of perceiving physical things why should it not retain both methods—persist in retaining them? In sense-perception physical objects are habitually observed separately from minds; why should "mind-perception" not be persistently employed to make the perceiving mind independent of bodily sign or gesture. A plausible reason can perhaps be given. The one method of sense-perception suffices for knowledge of the physical world and of animate bodies; it also, by inferential assistance from the mind's own conscious processes, suffices for knowledge of other minds. Since one method can replace two, economy makes the substitution. When the child has once apprehended minds he gradually restricts his knowledge of them to the one route of sense-perception, which informs him both of physical things and, conjoined with an inferential supplement from his own conscious states, of other minds.

There is less plausibility in Mrs. Duddington's assumption that sense-organs are instrumental to sense-perception by an accident of our psycho-physical organisation. The complexity of neural arrangements suggests the expenditure of considerable effort to bring consciousness into touch with the world. This suggests, in its turn, that the mind is compelled to use these arrangements to obtain its perceptual grip. The absence of corresponding organs for the apprehension of mind by mind leads Mrs. Duddington to infer that neural arrangements for perception are accidental. She concedes a startling priority to function over organ by declaring that since knowing is essentially discrimination there is no *a priori* reason against the discrimination of anything. Perception discriminates particulars, why should minds, therefore, not be perceived? We cannot see when our eyes are blinded, nor

can we hear when our ears are destroyed. The discriminating function seems to run parallel with the perfection or imperfection of its organ. The psycho-physical organisation very successfully simulates a dependence of discriminative power on adequacy of organ if it be merely accidental and not necessary. It is not intrinsically impossible but it would certainly be strange if the mind began by surrendering a universal discriminative power to the caprices of neural arrangement in limiting its ability to perceive physical things, and then consented to confine also its ability of apprehending minds to the same caprice of neural organisation.

There is no real warrant for Mrs. Duddington's condemnation of "the usual psychological doctrine that knowledge of minds is indirect". An elaborate neural organisation secures perceptual contact between mind and world. The mind has no apparent organs for direct apprehension of other minds. Minds do communicate via bodily actions. Community of nature provides a basis for certainty of inference when one mind knows another. Criticism cannot discover an incompetency in consciousness to realise from the association between its own processes and its own bodily actions that behind other bodily actions there are consciousnesses like unto itself.

IV.—SOME MODERN ÆSTHETICIANS.

By H. R. Marshall.

That beauty is subjective rather than objective is a tenet which has become prominent in the modern consideration of Æsthetics as the result of its advocacy by Kant. It is indeed a doctrine which emphasises a sharp distinction between our thought and that of the great Greek philosophers to whom all students of Æsthetics turn for guidance and inspiration. They, to be sure, were less concerned than we are with the contrast between the subjective and the objective, their thought being especially fixed upon the contrast between perception and thought, both of which are nowadays commonly placed in the subjective realm. Nevertheless, if we study their works, with the modern subject-object distinction in mind, we see that Plato looked upon Beauty as something quite objective, and that Aristotle in his *Rhetoric* and *Poetics* dealt almost wholly with what we should describe as objective considerations. They thus made coherent the conceptions of the naïve man who even in our day rejects promptly any suggestion that the beauty of the object before him is not in, but rather in his mode of consideration of, the object.

No one, however, who notes carefully the drift of present thought can fail to see that the position for which Kant stands sponsor gains strength from day to day, notwithstanding that the revolt of the common man has been reinforced, as we all know, in connexion with the development of the conception of the Absolute, by a goodly number of metaphysicians, led by men like Schelling, Hegel, and Schopenhauer.

Formidable as this attack has been I have never been convinced that the subjectivist position has been seriously endangered, for it seems to me that the Absolutist defence of objectivism carries with it no explanation of the most commonplace of facts in regard to the varied æsthetic judgments of man, all of which strengthen the subjectivist view.

If beauty is appreciated as the result of the grasp of certain aspects of the objective Absolute, it would appear natural to

find all men appreciating the same beauties; yet you and I do not always find beauty in the same objects. Moreover, some men who are highly sensitive to beauty in connexion with certain arts are utterly incapable of appreciating it in connexion with other arts of equal development: the musician perhaps cares nothing for paintings; the sculptor perhaps nothing for music. But if beauty were a fixed objective thing of which we occasionally catch a glimpse, then if the capacity to gain this glimpse were once given to a man in connexion with attention to one art, it is not easy to see why the capacity to recognise this beauty in connexion with other arts should be lacking. It is surely straining a point if, with Bergmann, we suggest that the difference in men in this regard is due to actual difference in the objects observed, which we mistakenly think to be the same for each of us.

If, following the thought of Lotze, we say that the well-recognised differences of taste in man may be accounted for if we make the assumption that the capacity to grasp the Absolute Idea is subject to development: then we are faced by the fact that certain objects, which in an undeveloped culture, of race or individual, are generally held to be beautiful, lose all æsthetic attribution as the race or individual develops a fuller culture. If the barbarian and the child can grasp the Idea sufficiently to find beauty in glaring contrasts of crude colour and blatant music, how does it happen that the fuller development of culture in races and individual men carries with it a loss of beauty in these crude colours, and in this noisy music; and leads to the discovery of beauty in new fields. One may in fact find the old sources of æsthetic delight yielding actual ugliness, the contradictory opposite of beauty; in this recognising the quality of beauty, and denying its application in the case observed.

If the Lotzian explanation is to be accepted we seem to be compelled to adopt the very strained hypothesis that in an individual who has once developed a capacity to grasp a certain aspect of the Absolute, that capacity may be reduced as the result of a higher cultural development, which if high enough may even lead to his actual denial that the form in question is an aspect of the Absolute. This hypothesis I do not believe any modern Absolutist would maintain.

An accession to the objectivists' ranks rather than a reinforcement of their assault upon the subjectivists, we find in the view presented by E. H. Bullough. He tells us[1] that what he calls "psychical distance" is "a factor in all art".

[1] *British Journal of Psychology*, v., p. 90 ff.

It is always there even when unnoticed; but when it is, it "comes to us as a revelation; such revelations being precisely those of art". "What is, both in appreciation and production, most desirable is the utmost decrease of distance without its disappearance."

This "psychical distance," he holds, is obtained "by separating the object and its appeal from one's own self, by putting it out of gear with practical needs and ends," but retaining a personal relation. It gives syntheses of such opposites as objective and subjective; idealistic and realistic; sensual and spiritual, individualistic and typical.

Beyond the author's acceptance of the objective position above referred to, it seems apparent that he is influenced by the efforts of the objective idealists, especially of Hegel, to subsume opposites under higher syntheses. This last point, however, does not concern us here.

The meaning of the author's phrase "psychical distance" is not obviously clear; but the addition of the qualifying word "psychical" seems to indicate that he refers to no more than what is usually spoken of as the mental process of objectification. If, however, he means more than this then his view is subject to the objections to the Absolutist theory made above.

In his words above quoted he may be taken to refer to art, and not specifically to beauty, which would mean that he follows those who look upon art as something in connexion with which beauty may appear, but which is itself apart from beauty. If, however, he does refer to beauty, as on the whole he seems to do, and identifies it with this "psychical distance"; then it would appear that in holding that both in its appreciation and production what is most desirable is the utmost decrease of connexion with practical needs and ends, but a maintenance of the personal relation, he is really basing his view upon the maintenance of the Kantian notion that beauty always involves disinterestedness; a view that Santayana[1] has once for all shown to be ungrounded.

Turning now to the thought of those who have been more evidently influenced by German metaphysics, we may consider in the beginning a view which harks back to the thought of the author of the first *Philosophy of Art;* for in J. Mark Baldwin's *Theory of Pancalism*[2] we have a result, as its author acknowledges, quite similar to that suggested by Schelling, although reached by a very different mode of approach, and by an original method. His view may be summarised as follows:—

[1] *The Sense of Beauty*, p. 37 ff. [2] *Genetic Theory of Reality.*

In the search for reality the mystical mode of the pre-logical stage gives place to the speculative mode of the logical stage. Neither of these exhausts the real, and each by itself involves but a partial appreciation of it; the mystical concerns itself with the self-experience; the speculative with the "other" of the objective world. "The question is this: Is there any experience in which the self realises itself, not as in opposition to the 'other,' but as in the 'other'?".[1] This synthetic reconciliation our author finds in the æsthetic experience. "In the æsthetic contemplation of an object experience achieves the synthetic and full appreciation of reality";[2] æsthetic contemplation being "a state which may be described as one of feeling".[3]

The difficulties connected with the dependence upon "feeling" are too great to be overlooked, as I have elsewhere argued at length. The word "feeling" means so many, and such different, things that it is impossible to define with clarity a theory expressed in its terms. Nor will anyone who is actively engaged in artistic work agree that our sense of beauty can be limited to the realm of contemplation. If such a view is maintained it would appear that our author's contention involves the notion that we have reality given in only some of, and not in all of, beauty; a position that can surely not be satisfactory to either æsthetician or metaphysician.

With the general metaphysical positions maintained by the author, I can, of course, not attempt to deal; I may, however, note Prof. Urban's remark that "an initial presumption against the æsthetic as the ultimate aspect of reality cannot be denied . . . the fleeting, somewhat aristocratic, and parasitic nature of beauty makes the author's task a difficult one. The æsthetic experience has little of the massive and instinctive element attaching to the common-sense and religious interpretations of the word. It has none of the atavistic lure that draws others to a pre-logical and mystical union with reality. It is wholly lacking in that wilfulness which gives to idealistic and voluntaristic theories their power. Yet it is to forces such as these that conviction must ultimately appeal, and æstheticism makes no such appeals".[4] To this I may add that I fail to find convincing the author's effort to show that our mode of mental functioning in relation to the Beautiful is quite diverse from the modes found in relation to the True and the Good. As A. Lalande has said "The æsthetic norm has rights equal to the logical and moral; but it cannot be accorded the hegemony".[5]

[1] *Op. cit.*, p. 200. [2] *Op. cit.*, p. 231. [3] *Op. cit.*, p. 209.
[4] Wilbur M. Urban, *Journal of Philosophy, Psychology, and Scientific Methods*, xiii., p. 358.
[5] *Cf. The Philosophical Review*, vol. xxv.

We find in our day not a few, and some of them brilliant, writers of works relative to Æsthetics basing the positions they take upon doctrines presented by the talented Italian philosopher Benedetto Croce; although it seems unlikely that they have fully comprehended the subtle and complicated metaphysical system he has propounded, or would be willing to accept many of the points he finds himself forced to maintain if he is to carry his theory to its logical conclusions. His influence is easily explicable, however, when one notes that certain of his doctrines to which we shall presently refer appear on their face to enforce the tenets of Romanticism.

Croce has devised a metaphysical theory in which his Æsthetic plays a significant rôle.[1] "Mind is a reality, and there is no reality which is not mind. . . . This mind which is reality, or this reality which is mind, is an activity the forms of which we may distinguish; and also we may distinguish the order and relation of the forms; but we cannot separate them. . . . Reality is a system. The work of philosophy is to present these forms of activity and show how in their processes they unite to form the concrete world of experience. Two forms of this activity we are accustomed to distinguish—knowing and acting. The first is the understanding, the theoretical activity; the second is the will, the practical activity. They stand to one another in the relation of a definite order. . . . Knowing . . . is an active process, and its activity has two forms; one an activity of intuition, the other an activity of conceptual thinking. The science of the one is æsthetic; of the other, logic. Æsthetic stands to logic as a first to a second degree, for logic is dependent on æsthetic, while æsthetic depends on no other activity. The practical activity is also sub-divided into an economic and an ethic activity. Knowing and acting each with its two sub-divisions yield to us four pure concepts which together exhaust reality. The four pure concepts are beauty, truth, usefulness, goodness."

Croce is himself a literary artist, and he has given us a really beautiful symmetrical schematisation of which the above is a succinct statement. How far this system is satisfactory as a metaphysical theory it is not for me to inquire; the point that interests me is his doctrine that the activity of intuition has Æsthetic as its science, and yields to us beauty as its pure concept.

[1] An interesting résumé of this theory will be found in H. Wildon Carr's *The Philosophy of Benedetto Croce*; from pp. 7 and 8 of which I here quote.

That Croce means to indicate by the word beauty exactly what the common man means to indicate by the word is clearly shown by the many illustrations used in his books. Intuition is for him the primary fundamental activity, and beauty is its pure concept.

I myself fail to see any ground for this claim. That there is a primary fundamental activity is without doubt true; and we may, if we choose, call this intuition. We may also, if we choose, designate the science of this activity of intuition by the term Æsthetic, somewhat after the manner in which Baumgarten applied that term to what he conceived of as the logic of obscure knowledge. But as Baumgarten failed to convince the world of thinkers that beauty was the concept of his Æsthetic, so I think it must be held that Croce has failed to present satisfactory grounds for his claim that his Æsthetic, as he defines it in terms of intuition, has beauty as its concept.

Mr. Carr, in the work above referred to,[1] illustrates Croce's meaning by describing an experience of his own as he walks in a garden of a summer evening, picturing eloquently the beauties of nature borne in upon him. "What I contemplated was beautiful," he says. . . . "If I think of the experience as the simple, single, indivisible reality it was, not as something separable into this, that and the other; there is a quality, or character of that experience which is æsthetic, and if we suppress in thought everything in the experience which is mental we must suppress this æsthetic character."

But suppose Mr. Carr had taken as his illustration the experience of a soldier in the trenches in our late war, the course of his argument would then certainly lead him to say that *ugliness* is the pure concept of intuition.

Croce might refer to his contention as put in the words of Mr. Carr.[2] Each "distinct concept is itself a unity or synthesis of opposites. The concept of beauty is not the concept of some character which exists, or could exist, in pure abstraction from the character which is its opposite, ugliness. Ugliness is an element in the concept of beauty. The two characters, the beautiful and its opposite the ugly, unmeaning and unreal and undefinable in abstraction from one another, exist only in the synthesis of the distinct concept beauty."

But if we imagine ourselves gaining the experience of the soldier in the trenches is it not equally possible to reverse the terms of the synthesis, and to say that 'beauty is an element in the concept of ugliness; the two characters, the ugly and

[1] *Op. cit.*, p. 9. [2] *Op. cit.*, p. 141 f.

its opposite the beautiful, unmeaning and unreal and undefinable in abstraction from one another, existing only in the synthesis of the distinct concept ugliness'? And in that case are we not as fully warranted in holding that ugliness is the pure concept of intuition, as Croce is in holding that beauty is this pure concept of intuition? It seems to me that one position is as fully unwarranted as the other.

Croce also maintains with insistence a doctrine that is the one referred to above as making a special appeal to modern Romanticists. He holds that intuition necessarily involves expression,[1] pure intuition and pure expression being one and the same thing.[2] The æsthetic is not feeling;[3] by which term he means a special non-cognitive activity possessing two poles, positive and negative, pleasure and pain.[4] Beauty is successful expression; or better, expression and nothing more; because expression, when not successful, is not expression.[5] For this reason beauty does not possess degrees; ugliness does.[6] The judicial activity, which criticises and recognises the beautiful, is identical with that which produces it.[7] And finally, inasmuch as beauty is successful expression we are led to the conclusion that the Linguistic and the Æsthetic are identical.[8]

Concerning this view I may remark in the first place that it gives us no guide to the nature of beauty. Beauty is described as successful expression. Now all of man's activities are expressive in some sense, while few of them result in yielding the experience of beauty; in other words some expression is, and some is not, successful, and we naturally ask wherein this success consists. But we are told that expression when not successful is not expression at all. Beauty and expression are thus held to be identical, and we find that our author uses the latter term as a synonym of beauty, and not in any way as explanatory of its meaning.

He tells us, as we have noted that the individual activity which recognises the beautiful is identical with that which produces it. Now it is of course quite possible, and quite legitimate, to consider as a working hypothesis the view that beauty exists only in the observer's own artistic expression, so far as he evinces any, and to try the hypothesis out in the court of experience. If we do so we find that one of the first results is that it compels us to hold that beauty is in all cases the creation of the observer, and therefore that there is no

[1] Confer *Æsthetic*, Benedetto Croce, translated by Douglas Ainslee, p. 13.
[2] *Op. cit.*, p. 391. [3] *Op. cit.*, p. 123. [4] *Op. cit.*, p. 122.
[5] *Op. cit.*, p. 129. [6] *Op. cit.*, p. 130. [7] *Op. cit.*, p. 197. [8] P. 234.

such thing as the beauty of Nature. This result Croce boldly accepts contending that what we think of as beauty in Nature is in reality put there by our own imaginative activity. It is to be noted that Mr. Carritt, to whose critical appreciation of Croce we refer below, dissents from this final result; but in so doing, he, in my view, abandons the whole doctrine which Croce sets out to establish.

It may be possible for some men, constituted as Croce apparently is, to find this mode of beauty in the imagination of themselves as its creators through their own expression; but I am confident that the average man finds the beauty of Nature quite apart from such egoistic imaginings, and solely in the impressions given. In fact there is no little evidence in Croce's own writing[1] that he himself experiences such beauty of impression, pure and simple.

It may be noted, moreover, that the hypothesis when carried to its legitimate conclusions leads to results which will appear to the average man highly paradoxical. Thus we are asked to agree that "the beautiful does not possess degrees," "there is no conceiving a more beautiful";[2] that "expression is truth";[3] and that "every act of expressive activity" (*e.g.*, that of the famished glutton, H.R.M.) which is so really, will be recognised as beautiful.[4]

On the whole I find no reason to agree that Croce's Æsthetic will in the future be held to have been an advance in the progress of thought on this subject.

We thus see clearly how it happens that Croce's contentions appeal to our modern Romanticist, of whose positions we may well remind ourselves. The fundamental difficulty with their view lies in its failure to distinguish between the quite diverse attitudes of the artist and of the observer, and in the attempt to interpret the latter in terms of the former. This notion is usually masked by the Romanticist, but in our author's work it is frankly accepted, and as frankly carried to its legitimate conclusions, resulting, in my view, in a complete *reductio ad absurdum*. In its crudest form it claims, as has been suggested by some thorough-going romanticists, that the beauty we find in Nature, in a landscape for instance, is due to reminiscences of artistic representations of landscape. This extreme view may however be passed by with little comment, for it very evidently cannot apply to all the beauties of Nature; for instance to the beauty that is found in some quite unique gem, or in the brilliant breast of some rare tropical bird that the observer has never before seen.

[1] *E.g.*, bottom of p. 131. [2] P. 130. [3] P. 167. [4] P. 202.

Somewhat closely allied with this notion is the "*Einfühlung*" theory of Lipps according to which beauty is found in natural objects so far as the observer imagines himself as within these objects; and results from his thinking these objects to be what the observer himself would be could he express what he appreciates are the functions of these objects. Without any question for some small class of highly sophisticated men the beauty of natural objects is enhanced by this imaginative process; but it seems clear to me that we fail altogether to find in such a theory the explanation of the æsthetic experience of the unsophisticated man, or of certain sources of beauty that are very generally recognised. It is impossible, for instance, to follow Lipps if we attempt thus to explain the beauty the human male finds in the contemplation of the breasts of the female, the functioning of which he surely cannot appreciate.

A more subtle statement of this conception is attempted by Mr. E. F. Carritt, who may without offence be called a disciple of Croce, but whose careful critical attitude gives his thought independent value. He puts it thus:[1] "It is not the written or spoken poem nor the perceived atmospheric conditions which must strictly be called beautiful, but only a particular way in which at a given moment any individual expresses himself in them". And again,[2] "A mountain, a poem, a song is beautiful to the man whose feelings are expressed in it; and it makes no difference whether we say that it expresses them to him or he expresses them in it".

It seems to me that it makes all the difference in the world which we say. If we fail to make, and keep clear, the distinction we fall into the most serious of difficulties. In the case of Mr. Carritt, it leads to vagueness and mysticism. It helps us little to conclude, as he does,[3] that all beauty is the expression of what may be generally called emotion, and that all such expression is beautiful, unless we define the term emotion; and if we do so intelligently we surely find that it is not true that all expression of emotion is beautiful. Nor, if we ask what expression means, does it help us to be told that "it is a primary spiritual activity" which "can no more be explained than can thinking itself". In fact our author in the final sentence of his interesting volume tells us that he does not pretend to have reached a solution satisfactory even to himself.

[1] *The Theory of Beauty*, p. 298. [2] *Op. cit.*, p. 182.
[3] *Op. cit.*, p. 296.

We may now turn finally to the consideration of a theory which appears as a development of the metaphysic of Hegel, but which at the same time is markedly influenced by the tenets of the Romanticists which appear dominant in Croce's work; and which shows the same failure to distinguish the attitude of the creator of beauty from that of the observer.

More than two decades have passed since Bernard Bosanquet published his valuable *History of Æsthetic* in which he gave fairly clear indications of his own views, but only to one who took the trouble to read between the lines. These personal views have, however, been presented since then in a series of lectures,[1] very briefly indeed, but in clearer form.

Did not one know of the Hegelian influence evidenced in other writings of this author he would feel it throughout the present work. It is especially noticeable in his treatment[2] of the "Æsthetically excellent," or real beauty, as inclusive of what we usually call the beautiful and also of its contradictory the ugly.

The influence, however, which from our standpoint is most significant in the development of his thought is, however, that arising from the prevailing recrudescence of Romanticism which lays stress upon the importance of the creativeness of the artist, to the oversight of other elements of equal importance. Its catch-word is "Expression for expression's sake"; and that, with a certain change, is employed by our author.

Apparently led by this influence, Dr. Bosanquet, like Croce, fails to distinguish between the attitude of the creator of a work of beauty, and that of the uncritical or critical observer. He tells us[3] that "the spectator's attitude" is "merely a faint analogue of the creative rapture of the artist," and[4] that "the whole world of beauty . . . is the individual operation of a single impulse, the same in spectator and creative artist".

This position is, in my view, as I have already stated, distinctly contradicted, if in no other manner, by our appreciation of much of the beauty fitted in the observation of Nature. I cannot discover in the beauty I find in a glorious sunset, or in the delicate poppies on my table, or in the song of the bird warbling in the trees without, even the very faintest "analogue of the creative rapture of the artist," with which I may perhaps claim to be in some measure acquainted.

[1] *Three Lectures on Æsthetic.* Confer my Review in the New York *Nation*, July 29th, 1915.

[2] *Op. cit.*, p. 98 ff. [3] *Op. cit.*, p. 35. [4] *Op. cit.*, p. 111.

The artist is led by impulse, and in his creative moments is careless of what Bosanquet calls the "world of beauty"; or of any aim, other than the expression in his chosen medium of the conception he has in mind. In this his attitude is that of the inventor, the discoverer; and he gains, as all inventors and discoverers do, the joy which creativeness always carries with it. When he gains the appreciation of the "world of beauty" in which his work is to take its place, as he must from time to time in intervals between his creative moments, he at once takes a new position, namely that of the observer of beauty; and his mental attitude changes wholly. He is not then creative, but perceptive; not concerned with the joy of accomplishment, but with the complex impression that yields beauty. Without doubt in many cases where the impression is given by Art rather than Nature the studious connoisseur finds in this complex impression elements correlated with the sympathetic comprehension of the artist's attitude; but it seems clear that "the world of beauty" of the great body of those who are thrilled by artistic products cannot be appreciably involved with this "Empathy"; and entirely impossible to maintain that the beauty discovered in Nature can be expressed in terms of this "creative rapture of the artist".

This influence of modern Romanticism must again be borne in mind when we consider our author's emphasis of expression; when, for instance, we read[1] that the æsthetic attitude may fairly be described as "feeling expressed for expression's sake". Evidently the term expression may, in this connexion, have the two distinct references of which we have spoken, which really involve two distinct meanings.

It may refer to the object that yields the impression of beauty; which object is thus supposed to bring into view, or express, some hidden significance that is not given in mere appearance. Thus Mr. Bosanquet tells us[2] that "Nature has in it a life and divinity which it is attempting to reveal". Taken thus, expression can only appeal to one who assumes the attitude of the observer.

Or the term expression may refer to the creative effort of the artist who attempts to interpret, or "express," some conception of his own that is hidden from the insight of the spectator to whom his artistic product appeals.

One who fails to discriminate between these two quite diverse attitudes of mind can thus scarcely avoid being led to obscurity of thought when he defines the æsthetic attitude as

[1] *Op. cit.*, p. 36. [2] *Op. cit.*, p. 55.

"feeling expressed for expression's sake". Dr. Bosanquet indeed gives us[1] an alternative definition of this æsthetic attitude "so far as enjoyable" as "the pleasant embodiment in an appearance presented to imagination or imaginative perception"; and here he apparently has in mind the attitude of the observer who finds some special meaning expressed in the observed object. But that he does not limit his conception to this expression in the object is made clear, for instance, where he tells us[2] that "imaginative expression creates the feeling in creating its embodiment," in which case the expression must inhere in the creative activity of the one who produces the embodiment.

In taking "feeling expressed for expression's sake" as a definition of the æsthetic attitude, it is, of course, important to comprehend the meaning to be attached to the word "feeling," which word, as we have noted above, is very loosely used in common speech, so much so indeed that careful analysts hesitate to employ it at all. Croce, for instance, whose general views on Æsthetic are in many respects closely allied with those of Dr. Bosanquet, holds the term to be utterly unintelligible. Acknowledging this difficulty, Dr. Bosanquet, therefore, attempts to define the word, telling us[3] that he means by it "the concernment of the whole 'body-and-mind'"; and adding[4] "In it mind is all body, and body all mind". Here there is surely a lamentable lack of clarity where clarity is most important.

But assuming the meaning of "feeling" to be grasped, it seems clear that, if Dr. Bosanquet's definition is to be held to be satisfactory, "feeling expressed for expression's sake" must always be æsthetic. This is certainly not true if æsthetic is to be identified with the appreciation of what our author calls "the world of beauty"; for, on the one hand, this formula applies, not only to the product of the great artist which arouses our enthusiasm, but also to that of the tyro who fails altogether in his effort, even in his own estimation; and on the other hand it does not seem possible to make it applicable to the beauty of natural objects without changing altogether the reference of the term expression.

We are bound, therefore, it seems to me, to hold that our author, and those who approach his mode of thought, are not dealing with Æsthetic as the study of what is ordinarily called the beautiful, but rather with a special concept for

[1] *Op. cit.*, p. 36. [2] *Op. cit.*, p. 34. [3] *Op. cit.*, p. v. [4] *Op. cit.*, p. 7.

which no more can be claimed than that it finds its most interesting exemplification in the quality which attracts the lover of Nature and of Fine Art, and which is known to the average man as beauty.

That Dr. Bosanquet is dealing with a very special concept of this kind is indeed very evident to one who follows the course of thought of the modern idealists since Kant. Yet this everyday quality of beauty was surely referred to in the treatment of Æsthetic by Baumgarten and Kant; and in fact we must hold that Dr. Bosanquet himself has this quality in mind if we judge him, apart from his metaphysical theory, by the language of the descriptive and illustrative passages of his *History*.

In any event, it is clear that it is this quality of beauty to which the average cultivated man refers when he uses the word æsthetic, and he is fully justified therefore in asking how far the later development of metaphysic has aided the spectator in the appreciation of beauty, the critic in the guidance of his judgments, and the artist in his effort to attain his goal. That it cannot hope to help the artist, Dr. Bosanquet himself acknowledges.[1] That it has broadened the appreciation of beauty so far as it has led to the introspective studies of men like Schiller and Goethe cannot be questioned; but it must be looked upon as having been the stimulus to such introspective studies rather than their effective basis. That it has brought into prominence indirectly certain valuable principles of criticism must also be granted; but this because it has involved the concentration of thought upon the quality of beauty as given in experience, rather than because of the appreciation of any necessary implication of the tenets presented for consideration.

The serious student of æsthetics who takes such a view as we have taken in this and the preceding chapters cannot, it seems to me, fail to find his thought turned from metaphysic to the psychological study of the experience involved in the appreciation of beauty. He must feel that in such psychological study alone he may hope to gain the fundamental grounds for a just appreciation of beauty in all its fullness, for a well-balanced critical judgment, and for a helpful view of the relation of the artist to his work. He must acknowledge a great debt to the metaphysical studies of the Greek masters; and perhaps as great a debt to those of the modern idealistic philosophers and to the talented writers influenced

[1] *Op. cit.*, p. 2.

by them, in that they have given him data of inestimable value in his work of investigation. But he must be convinced also that the metaphysical problems which are raised by the philosopher can never be solved until he bases his thought upon firm psychological grounds.

V.—DISCUSSION.

THE BASIS OF BOSANQUET'S LOGIC.

I.

PERHAPS I may be permitted to make a belated reply to Prof. Bosanquet's remarks in MIND, April, 1919, on my article in MIND, October, 1918. I feel that my best plan will be to state as fully as I can the ideas which led up to my view.

(i) "The sense world," says Kant, "is either a nature or no object of experience."

While I did not accept his opposition between matter and form, I saw that in some way the mind is carried to a "nature" through conditions which it does not see completely fulfilled, but which it endeavours to see fulfilled.

(ii) But on the other side I saw that the so-called "laws of thought" are laws of things; and I decided that Formal Logic was a science of objects—the science dealing with the elementary and universal characters of things. And by "Formal Logic" I meant, not the traditional Logic, but the Formal Logic we shall one day have, when we are clearer of the limitations which now beset traditional Formal Logic.

(iii.) I never regarded the syllogism as the sole form of deductive thinking. When Mr. B. Russell introduced us to the Logic of classes and relations, I thought that this was an enormous generalisation of formal processes. But I did not accept the view that these inferences were or could be linear in Prof. Bosanquet's sense. I felt that the premisses and conclusion hung together in a way which was not brought out in the formal steps. For I wanted an account of inference which should apply to it in the making, and not only when made; and when Mr. Russell admitted that his premisses in Mathematics were chosen because of the conclusions, I welcomed the admission, as possibly leading him to a view of inference such as I was seeking for.

(iv) I saw that in any actual inferences the essential steps depend on insight into the interrelations between part and part in a systematic field. I did not regard the "proof" of a proposition as set forth in linear inference as an account of "inference," but only as an account of the systematic interrelations between the parts of a systematic field. But, when the inference was stated linearly, it did seem to me that whoever granted the premisses was

compelled to grant the conclusions, and that *in that sense*, the conclusion depended on the premisses. But I could not agree that the premisses depended on the conclusions in the same sense. Premisses and conclusions alike seemed to explicate the whole system, and hence the premisses and conclusions "depended on" the system in *that* sense—a sense different from the sense in which the conclusion "depended on" the premisses. Indeed the phrase "depended on" was a phrase I preferred not to use. A conclusion "follows from" its premisses; "insight" into a system grows with "knowledge" of connexions between premisses and conclusions and conversely; and the ultimate justification of the relations between premisses and conclusions, and of their bearings on the nature of the system, seemed to lie in the nature of the system itself.

(v) I was still, however, left with the difficulty mentioned in (i) and (ii) above. When I read Bergson's *Évolution Créatrice*, and considered his criticisms of intellect, and his reliance on intuition, I put them alongside of what I had derived from Kant, and from those modern philosophers (chiefly French) who emphasise the fact that the mind makes certain demands of experience, and refuses to understand unless those demands are satisfied. The French philosophers (*e.g.* Poincaré) regarded these "constructions" as arbitrary and external to the facts; but while I recognised the need for the constructive activity of the mind, I could not agree that this activity was external to the facts. I thought it must somehow be anticipatory of the fuller experience. And that helped me to decide, in reference to Bergson, that he was right in putting intuition above formal inference, but wrong in his reason for doing so. The human mind, I thought, must make certain demands; but it does not know fully what these demands are. It comes gradually to consciousness of these demands, by the process of formulating them explicitly and formally, endeavouring to insist on these formally stated demands being satisfied, and being compelled to modify them in consequence. It was in this way that I read the history of the principles of Logic: "A is A" being first formulated in such a way as to make the whole universe unreal, and then substituted by "S is P," formulated so as to allow of variety, but still not of change. Thus "Understanding" (at any stage of the history of philosophy) would represent the progress the mind has made in formulating its demands to itself. "Intuition" would represent the whole mind reading its world in the light of all the demands the whole mind makes, these demands being not yet explicitly formulated.

(vi) But this was only half the problem. For the so-called "laws of logic," the mind's demands so far as explicitly formulated, must also be, I felt, laws of things. Accordingly, I endeavoured to work at the question from this side. And here I studied the Logics of Mr. Bradley and Prof. Bosanquet.

My problem was the problem of the relation between the knowledge of reality that takes the form of explicitly systematised

sciences, and the general knowledge of reality that makes up what we call our ordinary experience. In reading Prof. Bosanquet, I was enabled to formulate the view that ordinary experience of reality can only contradict scientific knowledge on the basis of scientific knowledge itself; that *e.g.* the perception that a particular fact is in contradiction with a scientific generalisation is not sufficient until the particular fact is shown to involve a new scientific generalisation. Thus for Prof. Bosanquet's statement that every generalisation challenges support from the whole of reality, I substituted the proposition that every generalisation insists on being borne out by the whole of reality. I did not of course mean that every generalisation must necessarily be true; but what I meant was that it is only on the basis of one generalisation being seen to be superior to another that the latter could be set aside.

To the view then that Reality is the ultimate subject of every judgment, I opposed the view that since the whole of our explicitly formulated knowledge depended on the abstraction from reality, and distinct consideration, of some special field, and that, since our remaining knowledge of reality must depend for its progress to explicitness on the knowledge already made explicit and not *vice versa*, it must follow that the ultimate justification for any explicit knowledge must be the whole field of that knowledge as an articulated system and not the general knowledge of reality which makes up our experience. If it is not borne out by the rest of our experience, of two things one: we must either reject it, or reject such of our experience as does not square with it. But since it is only on the basis of a further articulation of the already articulated narrower field that we can decide which of these alternatives we are to adopt, it followed, I thought, that *the whole process must pivot round the articulated field, and not round ovr experience of reality taken as a whole.* The articulated field, I thought, enabled us to get knowledge in virtue of its content and not in virtue of its reality; and thus the mind could construct a world (indeed, in the way of abstraction *must* construct a world) other than the real world, derive knowledge therefrom, and insist that if it was true in the constructed world, it must be true in the real world, so long as the same characters were to be found in the real world. Hence I was led into radical opposition to Prof. Bosanquet on the question of the ultimate basis of judgment.

(vii) "But then all judgment rests on supposal. Now there are some things you *must* include in any supposition, and these you cannot call supposals: all the 'formal' properties of things—non-contradiction, identity, distinctness, etc. These things really involve the inclusion of reality in your supposal."

To this I was unable to assent, although I could not solve the problem satisfactorily to myself. The objection had been felt by me all along, in connexion with my difficulty of seeing how the mind imposes conditions on experience and how at the same time these conditions must turn out to be laws of things.

I was unable to assent, for I could not see how these "formal"

characters of things could be in any way different from any other characters which the mind discovers in its exploration of any of its abstractly constructed systems. If, as I concluded in my reading of Bergson, the "formal characters" of things are seen to change in significance as philosophy progresses, this means that Formal Logic (in the sense suggested above—a science which is slowly developing and indeed very much in its infancy) is like any other science, and depends on the same kind of process.

Thus my attitude toward supposal was not exactly what Prof. Bosanquet supposes it to be. My reason for suggesting a posited system to be enough was, not that I thought that you could get away from reality by including everything in your supposal, but that I thought that posited systems are at the basis of the whole of our explicated knowledge of reality, and that the "reality" of any element in knowledge seemed to be irrelevant to the consideration of its content. Distinction between content and reality on the one hand, and the growth of knowledge of reality conceived as an extension and expansion of systematic knowledge of posited systems on the other, formed my starting-point. The relation between the general awareness of reality that we have in ordinary experience and the systems we posit, I conceived to be explicable in terms of the activity of the mind in taking up what is presented to it, abstracting from it a simplified system, understanding it wrongly, and being corrected by its own attempts to widen its simplified system; the process ending only when some simplified system is explored in its fundamental groundwork, as Prof. Stout suggested in his paper on Error (in *Studies in Humanism*).

II.

I should like to plead not guilty to some misinterpretations of his view which Prof. Bosanquet finds in my paper.

(1) I did not think that for him the important question is "whether the antecedent exists in fact" (MIND, April, 1919, p. 203). As this is a matter of some importance for my argument, I should like to dwell on it a little.

On p. 204 Prof. Bosanquet quotes two sentences from my paper. "On his premisses," I wrote, "if the judgment is to be genuine the new matter must be real." "The result, then, of Bosanquet's theory is that only the real, etc." What I meant was that these things seemed to me to follow as a logical consequence from his view, not that he actually held them—though I thought that he did hold them in the last resort, from the standpoint of absolute truth. I had endeavoured to make it clear in my exposition (Oct., 1918, pp. 440-444) that he did not hold them in relation to ordinary reasoning. The criticism I was trying to make was (*a*) that if the content need not exist, then the basis of the judgment is something less than reality; and (*b*) that the whole account of the relative parts played by "what must exist" on the one hand, and the

supposed content on the other, renders it impossible for Prof. Bosanquet *on his premisses* to accept a hypothetical judgment whose antecedent did not exist in fact. I was, in short, endeavouring to bring home a charge of inconsistency.

Thus to the paragraph on p. 209: "And hence, Mr. Russell goes on, etc." I should reply that it is just there that I was endeavouring to involve Prof. Bosanquet in a difficulty. It was not that I supposed him to hold that the new matter must be real. It was that I did not see how he could avoid this, and still hold that the ultimate subject of the judgment was reality.

(2) Prof. Bosanquet objects to my statement that on his view "the exploration of a relational system must take the system in some one particular setting" (p. 209). May I explain that I did not mean that on his view "you can establish relational systems pure and unattached, etc."? The statement complained of was inexact, for the sake of brevity, but I thought that it would be read in connexion with the more careful statement about universals on pp. 433-434; and my criticism which followed on p. 438 was devoted to showing that if this view of universals is to be taken seriously, predication of anything less than the whole of reality *of* the whole of reality, becomes impossible. When I spoke of a "concrete whole"—"characteristic structure" (p. 434)—the "concrete detail" to which I was referring was something other than the "indispensable basis" of which Prof. Bosanquet speaks on p. 209. I was thinking, *e.g.* of the way in which "breathing" in his example is modified by the question of whether it is a man or a horse whose breathing is in question (where he is not willing to push the doctrine to its ultimate consequences), or of the way in which the truths of Arithmetic are modified when you relate them to Economics. And thinking of the general view throughout the Logic that nothing, in the end, is really irrelevant, it seemed to me that Prof. Bosanquet's doctrine of universals ought to be either quite strenuously adhered to, or given up. But by "indispensable basis" of a relational system, Prof. Bosanquet on p. 209 means something different. He means "the reality which survives in it, including at least 'the laws of thought,' *i.e.* the ultimate factual characters of things" (p. 209); which are described (pp. 207-208) as "elements of the real universe" which we recognise and postulate, as "elements of reality which . . . are implied in the function of judgment . . . "; and (206) as "at the very least what I have called the life of reality, etc.," "the 'laws of thought,' *i.e.* the coherent life of the universe, and at least the most formal properties of things, identity, and distinctness and the rest . . . ".

My whole difficulty, in endeavouring to understand Prof. Bosanquet rightly, was in seeing how he could rest in this, and not go on to include the whole of reality in all its concrete detail in his "indispensable basis".

This difficulty Prof. Bosanquet does not feel in his own view; but it was this which made me endeavour on pp. 436-437 to formulate, as explicitly as I could—though with great misgivings, for I

did not manage to extract it with perfect certainty—what he meant by "Reality".

(3) Perhaps I may bring my disagreement to a sharp point by two quotations from him.

"Every judgment, just because, after its conditions are made explicit, it is absolute and universal in its challenge to reality, is conditional on the unknown. It asserts itself to be unconditional, but obviously, for this very reason, its truth depends on the absence of hidden obstructions in the universe of unknown reality" (MIND, *loc., cit.* p. 209; and *Implication and Linear Inference*, p. 174). I agree that "every judgment is absolute and universal in its challenge to reality". But I should insist that, if it is to be set aside, it must be set aside by judgments of the same type as itself—*i.e.* judgments depending on partial systems. I should deny that ". . . every inference involves a judgment based on the whole of reality, though referring only to a partial system which need not even be actual" (*Implication*, p. 4). I should put it just the other way. The judgment, I should say, is always and inevitably based on such a partial system, though referring to the whole of reality.

L. J. RUSSELL.

VI.—CRITICAL NOTICES.

God and Personality. Pp. 281. *Divine Personality and Human Life.* Pp. 291. The First and Second Courses of Gifford Lectures delivered in the University of Aberdeen in the years 1918-19. By Clement C. J. Webb. London: Allen & Unwin. New York: The Macmillan Co.

Gifford lecturers have often strayed far from the lines of thought proposed by the late Lord Gifford, and have said little or nothing about Natural Theology. This is not true of Mr. Webb, for his lectures are quite in harmony with the purpose of the testator. In these volumes a great and difficult subject is handled with judgment and conspicuous ability. The writer is well aware of the perplexities which attach to his theme; and while he is always ready to give a reason for his faith, the note of confident dogmatism is absent from his discussions. Mr. Webb's method of treatment may not always seem direct: he has a predilection for the historic method, and often develops his own views by a criticism of Plato or Kant, Bradley or Bosanquet. But in most cases the reader will find the lecturer is trying to follow the lead of the argument, and is on the way to conclusions more or less definite. It may be added that he is better qualified than most writers for dealing with this problem, inasmuch as he adds a sound knowledge of theology to his philosophical equipment. In proof of this we may refer to the careful and illuminating discussion of the terms *οὐσία*, *ὑπόστασις*, *πρόσωπον*, as well as their Latin equivalents *substantia* and *persona*.

In his first volume Mr. Webb traces the history of the term Personality, discusses its relation to Individuality and Rationality, and then goes on to consider the problems of Creation and of Sin: he concludes with chapters on the relation of Religion to Philosophy and on Divine Personality. The second volume examines the relation of Divine Personality to the Economic, Scientific, and the Aesthetic, the Moral, Political, and Religious Life, and finally deals with the Value and the Destiny of the individual person. In the space at my disposal I must confine myself to one or two points in the Lectures which appear to be of vital importance.

An outstanding and praiseworthy characteristic of Mr. Webb's work is the stress which he lays on the religious experience; and he is always concerned to do justice to what is implied in it. If there are figurative elements in the theological interpretation of that experience, it by no means follows that the experience does not

contain substantial truth. The view of Croce, who will not hear of a transcendent God, and who, merging religion in philosophy, denies that religion is an independent form of experience at all, is emphatically rejected. For it really reduces religion, not merely to a *Vorstellung*, but to an illusion. Nor is the theory of Mr. Bradley found satisfactory; for though it takes the religious consciousness as true so far as it goes, it denies that it is ultimately true. The God of religion on this view is not the Absolute but an appearance within the Absolute, and so in the end not perfectly real. Against this it is urged that the object of the religious consciousness must have full reality. Theories which, refusing to identify God with the Absolute, make Him finite, fail, because to abandon the identification of God with the Absolute is to abandon the quest which is religion (I., 138). Mr. Webb puts the point still more strongly when he says: "The statement that God is not the Absolute, must, I am sure, make nonsense of religion" (I., 152).

If God is the Absolute, can we ascribe personality to Him? and if so, in what sense? That an impersonal Absolute is not the God that religion demands is clear to our author; and he cannot endorse the view of Bosanquet that the Absolute, though individual, is not personal, for this would reduce the religious experience to something illusory. On the other hand to carry over into the Absolute all the implications of human personality would strain analogy to the breaking-point. Mr. Webb's contention is briefly this. What is individual is not fictitious: it has a unique place in the system of reality, and is at one and the same time distinguished from and related to other individuals. This twofold relation is most conspicuously seen in persons, the personal life being mediated by the elements of the social system in which it develops. Mr. Webb naturally finds it necessary to minimise the exclusive element in personality, and he does so by laying stress on the rational or common element. The personal principle of unity in experience, it is argued, is not distinct from the rational. The inference, I take it, is, that the personal life, though unique, is not a hard and fast unity, but may enter as an element into a larger life. The difficulty here is that the distinctive aspect of personality does not get its due. Rationality is necessary to a personal life, but the unique self-feeling and its expression in interest and purpose are just as necessary and make possible the activity of reason as personal. If so, one person cannot be merged in another without ceasing to exist as a personal being. In fairness, however, we must admit that Mr. Webb is very anxious to do justice to the moral and religious implications of the finite self. Like Prof. Pringle-Pattison he protests against the reduction of the self to an appearance, and refuses to allow that personal lives have only an adjectival existence in the Absolute. For this would falsify the religious experience. My difficulty is to understand how Mr. Webb, in harmony with his philosophical premises, can justify the reality of individual selves. Apparently he holds that evolution is in some sense creative; but his chapter on the Problem of Creation is neither very relevant to

the main issue nor very convincing. We are told that man's distinction from God and affinity to Him are expressed by the ideas of creation and generation, and the two ideas are somehow combined in the doctrine of a mediator. Now if the doctrine of creation be frankly accepted, we can understand how finite spirits have a reality of their own, though a dependent reality. And we may agree with Prof. Ward that, if the idea of creation will carry us further than any other conception to a satisfactory view of the universe, then the conception is justified. The trouble with Mr. Webb's position is, how he is to reconcile the assertion that human spirits are other than God with the view that they are also integral elements in the life of God as the Absolute. And I cannot find that he does this. It is in dealing with the problem of moral evil or sin that the need of differentiating human persons from God is most urgent, if God is, as the writer decidedly holds, a moral Personality. But in his chapter on Sin Mr. Webb does not go to the heart of the matter. He says truly that sin is not to be identified with the consciousness of incompleteness and finitude, and equally justified is his contention that the idea of God as an authoritative moral Personality over against the sinner is more in harmony with the consciousness of sin than any other conception. Nor would he, I believe, acquiesce in the statement that the Absolute or God is realised impartially in the sinner as well as the saint. Yet if a moral God is the Absolute, sin cannot be that which 'ought not to be' but must somehow have its legitimate place in the systematic whole. And, if I understand Mr. Webb rightly, he comes back in the end to the view that sin "mediates an ultimate good higher than without it could have been attained" (I., 195). It is not easy to see that he could come to any other conclusion on his speculative presuppositions, yet the result, it seems to me, is not in harmony with the testimony of the religious consciousness.

Why does Mr. Webb try to vindicate the conception of God as both the Absolute and a Personality? There are two main influences which go to determine his philosophy of religion. These interests are respectively religious and speculative. The sympathetic stress laid on religious experience has already been noted as well as the desire to do justice to it. The religious experience, we are told, will save us from being overcome by dialectical difficulties when we attribute personality to the Supreme Reality. Now a personal relation of subject to object lies at the heart of religious experience: it is a communion of persons, and there must be present in the Ultimate Reality that which sustains and justifies this relation. Mr. Webb does not try, as Lotze for instance has done, to offer a philosophical defence of the personality of God: his main contention is that the conception is necessary for the vindication of the religious consciousness. We may agree with him that the object of religious faith must be real and personal, and still decline to identify it with the philosophic Absolute. Mr. Webb, however, thinks religious experience requires this identification: a God less than the Absolute falsifies religion, and spiritual experience finds

no incompatability between Divine Personality and Divine immanence. God transcends our experience for He is not exhausted by it, but He is immanent in our spiritual consciousness, and is never regarded as a purely separate and exclusive personality. As experienced God is distinct from us, and yet our experience is somehow included as a factor in the Divine Life.

The word 'immanence,' I venture to think, bids fair to become one of the *idola* of the philosophic market-place, and one wishes that writers would sometimes explain what precisely they mean by it. It may bear the meaning that man's religious experience is only his own from a narrow point of view: from a more complete point of view it is part of the Divine experience. I am not sure that Mr. Webb would say this, but if Divine Personality is all-inclusive ought he not to say it? I cannot believe that the normal religious consciousness testifies to a merging of the human in the Divine. Sayings of mystics like Eckhart and others do point in this direction, but they do not stand for what is typical in religion. Communion is impossible without a real distinction which persists; and I do not see that spiritual experience implies more than a presence of God to man and an operation of the Divine Spirit on man. Nor is it possible to preserve the reality of the religious relation by insisting that the Divine experience transcends the human in the sense of never being exhausted by it; for my experience cannot fall within the Divine without ceasing in the end to be mine.

I cannot help suspecting that Mr. Webb's philosophical creed has affected his interpretation of the religious consciousness. His resolute attempt to construe the God of religion as the Absolute seems best explained by the speculative heritage which he shares with some writers that he criticises. He is very far from slavishly following the Hegelian tradition, but in this matter he has not emancipated himself from its influence: the result is seen in that tendency to over-unification (τὸ λίαν ἑνοῦν) which Aristotle criticised in Plato. It is perfectly true that in religion God is taken to be the Ultimate Reality. But every religious interest is conserved, and no religious instinct is violated, if we say, not that God is all that is real, but that He is the active Ground of the universe, the Supreme Spirit who is only limited in so far as He has limited Himself. Hence when Mr. Webb says that "a theological account of the religious experience" cannot stop short of conceiving this personal intercourse of man and God as falling within the divine life (I., 273), one cannot resist the conclusion that the religious experience is being strained to meet the exigencies of a philosophical scheme. One may sympathise much more with Mr. Webb's conclusions than with those of Messrs. Bradley and Bosanquet, and yet believe that the latter are more true to the philosophical principles which are common to all three. It is a testimony to his insight that Mr. Webb recognises that, in a religious interest, the Personality of God cannot be abandoned. To describe the communion of man with God some supplementation of the mutual

intercourse of human beings may be necessary, he remarks, but this supplementation must not be a reduction (II., 194-195). We welcome the repeated emphasis on the personality of man and God, and only wonder how it is to be reconciled with the theory that God and the Absolute are identical.

I must pass over the larger part of the second volume to say a few words on the final chapters which deal with the Value and Destiny of the Individual.

In treating of Naturalism and the Value of the Individual Person, Mr. Webb makes some interesting and valuable remarks on the so-called dissociation of personality. As he points out, the phenomenon is not limited to pathological cases, but exists in a minor degree in normal experience. Even in the extreme instances of multiple personality he rightly insists that the facts are only intelligible in the light of a fundamental personal unity. When he comes to consider the relation of Absolute Idealism to personality Mr. Webb will be found reiterating his belief in the reality of individual selves. And he asks whether Mr. Bradley's admission of the inexplicability of 'finite centres' is not a reason for doubting his reduction of them to appearance. To this he adds some relevant criticism of those who argue from the principle of self-sacrifice —the losing of one's life to save it—to a conclusion adverse to the reality of personality.

The chapter on the Destiny of the Individual is far from being dogmatic, and the writer confesses he has experienced the feeling reflected in the "present drift of opinion away from the old emphasis on personal immortality" (II., 256). Still he does not adopt the non-committal attitude of Mr. Bradley on the question of a future life—"after all it is possible". For Mr. Webb finds a justification for the belief in the nature of God as personal and His relation to finite spirits. If, he contends, we are conscious of a religious value in our unique individuality, we shall not readily be content to suppose this individuality is not secure in God. It seems to me the lecturer is right in resting the hope of immortality in faith in the Divine character, in the personal love, as he puts it, which is revealed in the religious experience. In putting forward this argument probably Mr. Webb supposes he is not departing from his intention of dealing with immortality only in so far as it can "be inferred from a certain theory of the nature or structure of reality" (II., 256). But I do not think many will agree with him. The truth is that no convincing argument for immortality can be given by metaphysics. In this connexion it seems a notable defect in the chapter that no stress is laid on the moral argument as leading up to and finding its completion in the ethical character of God. And it is strange that, though Mr. Webb deals with Plato's idealistic arguments for the immortality of the soul, he does not suggest that behind these idealistic 'proofs,' and giving birth to them, is Plato's profound belief in the moral order of the universe, and his sense of what is implied by it.

There are other points in the Lectures on which, if space had

permitted, I should like to have touched. I shall only add that, though one may disagree with Mr. Webb on some questions, he has beyond doubt made an interesting and important contribution to a very difficult subject. Not the least merit of the Lectures is their admirable tone. Though Mr. Webb has wide learning and sound scholarship, he is never harsh in his criticisms nor unduly confident of his own opinions.

G. GALLOWAY.

VII.—NEW BOOKS.

Psychologie Générale. Tirée de l'Étude du Rêve. By Albert Kaploun. Lausanne, Payot & Cie, 1919. Pp. 205. Price 4 f. 50.

This is a system of psychology based on the study of dreams. M. Kaploun felicitates himself on having avoided the observations of others. He has in this way, he considers, been able to free himself of certain illusions as to the characteristics met with in dreams.

His psychology is purely intellectual, in the sense that desire and will have no commanding place. They follow the intellectual movement and do not guide it. Thus as regards dreams, he is no Freudian. He refuses to correlate the material out of which dreams are woven with either wishes or fears, or indeed with anything characteristic of the real self. He is content to take it as given—due partly to chance, partly to ideas for which bodily affections are responsible. It is, of course, a sound instinct in the psycho-analytic view to try to find a reason for the emergence of any idea in sleep, and for the complexes built up there. M. Kaploun, by leaving this whole question aside, gives a sense of incompleteness.

M. Kaploun's general theory is as follows. The waking self consists of two entirely distinct selves, intimately united; in sleep they are separate. These two selves he calls the "automatic I" (moi automatique) and the "central I" (moi central). To the automatic I belongs the "tension" of waking life, the close touch with reality, the expectant attitude realising itself in movements; to it again belong the latent systems of knowledge which make intelligent awareness possible. The central I on the other hand is adynamic, a pure awareness. It consists in (*a*) a "point," or object of clear consciousness, and (*b*) an explicative function (Fonction explicatrice), called by him familiarly the F.E., which endeavours to synthesise into a whole whatever material is presented to it. In doing this the explicative function can draw on the whole of the latent knowledge possessed by the automatic I: not according to the principle of the association of ideas, in which M. Kaploun does not believe, but in virtue of an ultimate property of itself. The process of thought whereby relevant ideas are selected as needed, forming ever new combinations, is unintelligible on the principle of association. As he suggests in his last and metaphysical chapter, the process is much more like that of reasonance in music. In waking life, this reservoir of latent knowledge is not merely passively at the disposal of the central I, but actively maintained at hand, by the tension of the automatic I. It acts as a constant supervisor, keeping the explicative function (the F.E.) on the right lines.

In sleep—such is M. Kaploun's theory—these two I's are separated. Both are present, but owing to the tension of the automatic I being diminished, touch with reality is lost. It is replaced by the "objectivity" which characterises the "point" of the central I; and the explicative function is left to do its own synthesising without the active supervision

of the automatic I. The F.E. can draw on the latent systems which exist in the automatic I, but, acting without supervision, it "explains" by building up the data presented to it into the fantastic systems we are familiar with in dreams. It follows that dreams have no inner meaning whatever, since the F.E. for M. Kaploun contains none of the characters of personality, which fall rather in the automatic I.

The book is an exposition of this theory. It is based, we are told, on a long study of the writer's own dreams. The book, however, contains very little of his material, being almost entirely devoted to the exposition of his theory.

The attribution of the "tension" of consciousness and the latent systems of knowledge to one self, while the "point" of consciousness and the explicative function are attributed to another self, which can function separately, presents many difficulties. M. Kaploun avoids these difficulties in the case of waking life because he only considers questions of "function" and not questions of "nature"; and since in waking life the two selves are intimately united, the theory of their separate natures does not trouble him. But he has to regard the "point" of consciousness as at once separate from, and at the same time consisting of, the system of ideas which the explicative function builds up; and the F.E. he is compelled in the end to regard as consciousness itself (p. 191)—which however it is impossible to think of as independent in nature of the mass of latent knowledge which for him exists in the automatic I. His treatment of emotion and feeling, will and attention, leaves much to be desired. The "point" of consciousness changes with great rapidity of itself—attention is not to be found here: the "tension" which characterises the automatic I is a second source of change—and here is to be found what he calls "passive attention": "active attention" or will is a third source of change, situated neither in the central I nor in the automatic I. All M. Kaploun can tell us of it is that it is the power of interfering with the natural rhythm of the tension of the automatic I. It alone is will: an extremely abnormal activity, rarely exercised. Conation, then, is not only cut up into three separate activities, but one of them finds no home. As to emotion, it belongs to the tension of the automatic I, and depends entirely upon intellectual elements. So, too, "les passions, préoccupations, désirs, craintes, et en général toutes les tendances et toutes les dispositions affectives, sont, en veille, l'effet de connaissances systématiseés autour de certains objets, auquelles se proportionne la tension du moi automatique". "La sympathie, l'amour, l'antipathie, la haine, sont des directions imprimées à notre tension de veille par la compréhension du sens des personnes qui nous entourent." "Normalement, c'est l'affectivité qui dépend de la connaissance. . . . En générale, en veille, l'affectivité consiste dans les directions que les connaissances latentes impriment à la tension du moi automatique" (pp. 161, 162). They exercise no controlling power. They are effects, which are not causes.

In sleep, the difficulties in M. Kaploun's theory are avoided rather than met, by his readiness to call on the automatic I whenever it is needed, and by his giving to the explicative function and to the "point" (while calling the central I adynamic) all the activity which characterises the automatic I, without giving them any of the tension. It would indeed, we think, be easy to cut out the central I altogether and bring the explicative function and the "point" into closer connexion with the self which contains the tension and the latent systems. The varying degrees of tension would still play the part they do in M. Kaploun's theory of sleep. But for our part, we should have preferred a more positivistic study which would be chary of introducing "selves" but would be content to note and correlate characteristics. That M. Kaploun could have given us this, his

whole book shows; and the general acuteness shown throughout, and his soundness on many points of detail, make it clear that he could have given us a great book. The present book is well worth study; a book in which he presented his material in systematic form, with scientific precision and a positivistic scrupulousness, would be of lasting value.

LEONARD J. RUSSELL.

The Child's Unconscious Mind. By WILFRED LAY. London: Kegan Paul, Trench, Trubner & Co. Pp. 325.

The sub-title of the book is 'The Relations of Psycho-Analysis to Education,' and the book is addressed to teachers and parents. The first five chapters are concerned with the theory of the unconscious mind, the relations of unconscious action and thought to conscious action and thought, and the mechanisms or ways in which the unconscious influences the conscious life of the individual. The latter part of the book gives the educational application of the theory.

The book is written from the Freudian point of view. The author regards the unconscious as primarily concerned with hunger and sex, and treats the mental and physiological life of the individual as one. The aim of education is to transform physical energy into mental. Education has to give greater amptitude to consciousness, "to enable the individual to take in as many and as diverse thoughts as possible," which thoughts must be "thoughts having in them enough of a quality common to all mankind to be accepted by all" (p. 225). The function of the teacher is not to impart information, but to prepare the disposition of the pupil for the acquirement of knowledge. "It is the duty of the teacher and the sole art of teaching to produce an effect upon the pupil without the pupil's knowing how it was done" (p. 319). To fulfil his duty and exercise this art the teacher must study the unconscious, and be acquainted with the mechanisms by which it influences the conscious.

The author's use of the term 'unconscious' will probably prove a stumbling-block to the reader. The vibrations of ether in relation to the sensation of light are unconscious, while the sensation itself is conscious activity; the circulation of the blood and the processes of digestion are unconscious actions, so too are the automatic movements which may be attended to after their performance. The unconscious is said to be the repository of all the ideas and sensations, etc., which have entered our minds, and possibly of others which have not entered our minds during our own lives, but have been inherited. It has ascribed to it all the skill of a dialectician and the guile of a politician, yet it is said to be "an amorphous craving which can best be described as an unreasoning urge to life and love" (p. 50). It is impossible to attach any definite psychological meaning to a term which is used to connote absence of mental life and physical and physiological events, to denote the specific events which have been experienced in the past, and which may be recalled as memories or may be repressed as painful ideas, and further to denote the instinctive tendencies or impulses which characterise the human species, and are basic for mental development, and again, even more broadly, to denote life itself.

The educational application of the theory of the unconscious is new and of special interest to teachers. Mr. Lay writes as an enthusiast, but he is apt to set up half-truths as principles, and to deduce therefrom very questionable conclusions: *e.g.*, "We have no conscious desires that are not compensations" (p. 135). From this it is made to follow that the wife who is over-solicitous about her husband's health desires his death. The per-

son who takes up a crusade against cruelty to children or animals compensates for an unconscious desire to be cruel. "It is impossible to see in the external world what does not already exist in the mind" (p. 155). On the strength of this it is claimed that the critic must himself have the defect which he denounces in others; a poignant deduction for the schoolmaster.

However, if these and similar positive assertions are taken with a grain of salt to preserve the reader's common sense, parents and teachers will learn much from Mr. Lay's book.

BEATRICE EDGELL

Human Psychology. By HOWARD C. WARREN, Stuart Professor of Psychology, Princeton University. Boston: Houghton Mifflin Co., 1919. Pp. xx + 460.

In his first chapter Prof. Warren defines psychology as "the science which deals with the mutual interrelation between an organism and its environment". He explains that "environment includes all external forces and relations which affect the organism—social forces and values as well as physical". The only limitation which he imposes upon himself is that he will deal solely with those results of the interrelation of organism and environment which are expressed in "the mental life of man". The result is a text-book which, while it is of undoubted interest, in many ways, is somewhat overloaded with detail. A considerable portion of the first part of the book consists of biology and physiology for the psychological student. There can be no doubt that the information given is very necessary for an understanding of the mechanism of human responses, but it is not as clear that an elementary text-book of psychology should contain very much of this kind of material. Having dealt with "behaviour," Prof. Warren passes on to "Conscious Experience". Here he first discusses in detail the special senses; then considers "the components of mental states"; divides the latter into primary and secondary and gives each special consideration; passes on to discuss how mental states are related by different laws of succession; and concludes by a study of attitudes, character, and various typical modes of "organised mental life". But all this does not exhaust the range of the book. There is an appendix in which are discussed, "The Mind Body Relation," "Mechanism and Purpose," "Neural Activity," and "The Visual Process". This appendix is intended to deal with debateable problems "for the benefit of advanced students". It is rather sketchy.

To every chapter are appended a bibliography for further reading, and certain "practical exercises". The latter are often good, the former almost always both too "text booky" and too extensive.

Undoubtedly this book contains a considerable amount of interesting material. But most of it is easily accessible in as good a form elsewhere, and on the whole the volume serves to emphasise again the fact that what is particularly needed at this time, if genuine advance in psychology is to be made, is not a multiplication of text-books, but far more serious and well-informed research.

F. C. BARTLETT.

Common Sense and the Rudiments of Philosophy. By CHARLES E. HOOPER. London: Watts & Co., 1920. Pp. viii, 131. Price 4s. 6d. For the Rationalist Press Association.

Mr. Hooper is known to readers of MIND by his articles in October,

1915, and April and July, 1917. This book is the second edition of a book published in 1913, under the title, "Common Sense: An Analysis and Interpretation," noticed in MIND, July, 1914. The only parts much altered are in chaps. ix. and x., in which many passages have been deleted, and some new sections added. The additions in chap. ix. (pp. 69-80) are of most significance for the book, and concern the spheres and nature of science and philosophy. The additions in chap. x. relate to human character and purpose.

The title exactly describes the scope of the book. A very good descriptive analysis of common sense is followed by a brief sketch of the rudiments of philosophy. But the analysis is not carried through to the end. His account of the mental image is peculiar. It "begins to exist when something handled or seen is recognised, not merely as similar to what we have handled or seen before, but as the very same thing which we previously recognised" (p. 17). On what, then, is this recognition based? He speaks (p. 20) of the image as "inferring" its object; as independent of language; as a complex psychological state; as the basis of common sense; but we have been unable to gather his theoretical account of its relation to "sense data" (p. 79), which are described as giving us "our fundamental knowledge of the physical world". Discursive thought (in science) seems to arise out of "mental images" as an explicit analysis and synthesis of the characters of the real objects "inferred" by the mental images (pp. 69-70); but the account is very brief.

Mr. Hooper does not neglect the social and sociological bearings of common sense. His book may be commended as an excellent preliminary study for the general reader.

L. J. RUSSELL.

Lehrbuch der Logik auf positivistischer Grundlage mit Berücksichtigung der Geschichte der Logik. By TH. ZIEHEN. Bonn, 1920. Pp. viii, 866.

Prof. Ziehen's industry and courage in occupying himself during these grievous times with the writing of this enormous volume deserve the highest commendation, but I fear he has, in his resolution to forget the present over a philosophical work, made himself almost unreadable. It is not merely the actual bulk of his book which is appalling. He is so determined to deliver himself of all that he has to say on all topics in any way connected with logic that more than half of his treatise is taken up with what are after all Prolegomena. We have first over 230 pages on the history of logic; then an elaborate discussion of the "epistemological, psychological, linguistic, and mathematical foundations of logic," then an account of the "autochthonous foundation of logic," and it is only at page 459, with the opening of the "fourth part" of the work, that we get to what after all is the business of logic proper, the study of the "operations subsidiary to proof". I think this elaboration of introductory matter unfortunate for more reasons than one. It really compels the author to omit much which is of the highest purely logical interest. All he has to say which goes beyond the ground usually covered in elementary accounts of the concept, judgment, and inference is compressed into two very brief and sketchy final chapters on "proofs" and "theories," which together hardly fill thirty pages. These thirty pages have to represent the material which fills about half, and perhaps the most valuable half, of a book like Bosanquet's *Logic*. And, after all, most of the first half of the book, apart from the historical matter, is largely irrelevant to the logical doctrine of the second half. Whether we are positivists in our general philosophical

outlook or not is a consideration which ought hardly to be allowed to influence our views about the character of the methods available in science. I could wish, for my own part, that the author had kept his attempts to show how logic can be brought into line with his positivism and his own peculiar psycho-physics for a separate book, and had, by way of compensation, given us some chapters of the kind which make Jevons's *Principles of Science* so valuable a work, on the methods by which typical difficulties, such as, *e.g.*, the elimination of errors of observation, or the establishment of standards and units, are effected in the sciences. As it is, he has been forced, to his loss, to confine himself to the barest outlines of "Formal" logic in the old sense of the word. Even the discussion of the elementary principles of probable reasoning is excluded on the not very satisfactory pretext that the subject is "mathematical". Dr. Ziehen stands in his own light, too, by his excessive fondness for novel, and to my mind, often superfluous and uncouth terminology. His coinages are almost as many, and quite as ugly, as those of Avenarius, whom he has perhaps taken as his model. I am afraid that he has gone very far towards making himself unreadable, and this is a pity, for whatever one thinks of his doctrines as a whole, he has much that is interesting and suggestive to say on most of the very wide range of topics of which he treats. It would at least have been well to collect the novel technicalities in a list at the end of the book providing each with its definition, as Dr. Zichen has actually done for the symbols he uses. The historical material is very full, and will probably be found very useful, especially for the mediæval period. Dr. Ziehen's reading appears to be prodigious, and he has set an honourable example by the care he has taken to indicate where he is referring to a work at second-hand. Unfortunately he seems to have assumed that the history of logic begins with Aristotle; the important work of the Academy is overlooked, even in dealing with such matters as the method of "hypothesis," the pursuit of science by the propounding of *προβλήματα* and the use of "analysis" in geometry. It is also unfortunate, in view of the author's polemic against "logisticians," that he seems quite unacquainted with the revolution made in symbolic logic by Peano. The subject seems for him to end with Schröder's elaboration of the methods of Boole, hence many of his criticisms are really a whole generation behind the time. Acquaintance with the work of Peano, the later works of Frege, or the *Principia Mathematica* of Whitehead and Russell might have improved the chapter on Judgment considerably. As it is, the Theory of Types, perhaps the most important contribution made to logic for centuries, is ignored, and in one place there is a bad confusion between the relations represented in the Peano-Russell symbolism by ϵ and $\supset$. Acquaintance with Frege's symbolism, again, would probably have led to a clear recognition that the real peculiarity of Euclid's reasoning is simply the use of the inference from "any" to "every".

Of Dr. Ziehen's epistemology, which seems to be deduced from his own psycho-physics, I do not propose to say much. I am not sure that I understand it. As far as I do follow him, he seems to be attempting to construct a "normalised" or "standardised" world of terms with a definite character and standing in definite relations, such as we presuppose in logic, out of a "given" chaos of "absolute becoming". I do not see how this is possible. At bottom Dr. Ziehen appears to me to be committing that very fallacy of confusing the "philosophical" issue with that of positive science against which John Grote's *Exploratio Philosophica* is an eloquent protest. At any rate, I feel sure that the '*Gignomenologie*' on which he bases knowledge is just a dogmatic metaphysics; I may be wrong in thinking that it is bad metaphysics, but I do not believe I am wrong in holding that it is strictly irrelevant to logic. In particular I

cannot grasp what seems to be the author's main contention. He appears to hold that the principle of the syllogism in Barbara, the principle of Contradiction and that of Excluded Middle are all derivable by immediate inference from the principle of Identity, which thus becomes the foundation of logic. And the principle of Identity, as a logical law, is not axiomatic (for there really are no axioms); it is somehow got out of the 'gignomenal' impossibility of thinking at the same moment 'A is B' and 'A is not B'. I cannot follow any of the steps of this construction. As to the syllogism, Dr. Ziehen quite overlooks the points (1) that over and above the principle he means ($a \supset b$, $b \supset c$. $\supset$. $a \supset c$), actual inference requires also a second and different principle, never mentioned by him, and incapable of being expressed symbolically, "if a can be asserted, and if $a \supset b$, then b may be asserted". Even the principle meant by Dr. Ziehen cannot be got out of the principle $a = a$, nor yet can those of Contradiction and Excluded Middle, without a number of other independent postulates, as he will soon find if he attempts a rigorous 'symbolical' proof. Finally, I do not in the least know what to make of the underlying 'gignomenological' Law of Identity. Granted that I cannot at the same moment *think* 'A is B' and *think* that 'A is not B,' how does this fact prove that A cannot *be* B and not be B at the same moment? No one can "at the same moment" think all the propositions which are true of A "at the moment t". We need to think them successively. So my need to *think* 'A is B' and 'A is not B' successively is no reason at all for holding that A may not at once be B and not be B. The "foundation" of my certitude on that point, after all, must be "autochthonous".

In Dr. Ziehen's actual logical views I do not see very much that is original. The treatment of "Induction," which is characteristic, appears simply to reproduce Mill more succinctly. Dr. Ziehen seems unacquainted with Bosanquet's *Logic*; he would find there a very much more thorough attempt to analyse the procedure of the natural sciences than his own. It is a little surprising that a writer who justly insists on Mill's point that generalisation is characteristic of all "Induction" seems quite blind to the horrible difficulty attending on generalisation (I put it as Dr. Broad has put it in MIND). If "Induction" depends only on the Theory of Probability, it is easy to show that *every* scientific generalisation is infinitely improbable. Since we do, in fact, succeed in making generalisations, there must be some principle involved in generalisation which is not included in the premisses of the Calculus of Probabilities. But what *is* this principle? Dr. Ziehen has really nothing to say beyond repeating Mill's unprofitable allusions to a wholly undefined "uniformity of nature". If only he had spared time from his attempts to educe science out of "gignomenology" to grapple with this really formidable logical problem!

A. E. TAYLOR.

Sinnesphysiologische Untersuchungen. By JULIUS PIKLER, Professor in the University of Budapest. Leipzig: Ambrosius Barth., 1917. Pp. viii, 516.

Schriften zur Anpassungstheorie des Empfindungsvorganges. 1stes Heft: *Hypothesenfreie Theorie der Gegenfarben.* 26th July, 1919. Pp. viii, 104.

2tes Heft. *Theorie der Konsonanz und Dissonanz.* 2nd Aug., 1919. Pp. 34.

These investigations are classed by the author as physiological. But it may be observed that their basis of inference is largely, if not wholly,

physiological. Perhaps necessarily so. But as we know next to nothing of the nature of the waking and sleeping states or of the subtle physiological matters in question throughout these works by direct methods, the ground of argument like the detail of facts observed is essentially psychological.

What, then, is the "Anpassungstheorie," the theory of adaptation? Prof. Pikler is thoroughly dissatisfied with what he calls the "Erregungstheorie"—the theory that the data of sensation—what remains of sensory processes when we abstract from them all cognitive, associative, and allied influences—are correlated with or 'parallel' to certain complexes of neural excitation, these in turn being caused by stimuli applied to the sense-organs: in other words, the ordinarily accepted psychological theory. For this theory leaves everything dead and inert and is really unable to account for the half of what must be held to be data of sensation in the sense indicated. No! "Errerung"—and I suppose there must be some sort of excitation somewhere—must find its complement in a response from within, an adaptation of the internal impulses of the brain to these intruding forces. At every moment an inner resistance is banked up against the outer current, shaping itself to what it encounters and girding itself for the next phase to come All this thoroughgoing duality goes back to the fundamental alternative of sleeping and waking life. So Prof. Pikler's theory sets out from a theory of sleep.

He follows a line of thought that has been sketched by Claparède for the problem of sleep. We are not generally aroused from sleep by some stimulus and kept awake like Strümpell's patient by the constant titillation of the senses. Like him really we also rather wake up spontaneously, without any consciousness of a waking stimulus. We feel besides whether our sleep has been completed or not. In short waking like sleeping must have some inner cause.

Sensations cannot therefore be correlated with characteristic physical effects proceeding from stimuli. For that would imply a separateness of each from all others and changeless receptors. Such independent stimuli could not possibly yield the unitary mind we know. *Wakefulness* must be the agent. "As the stimulus may do nothing in the organism, *it alone* must produce the sensation. Spontaneously, before the stimuli would exert any physical action in the organism or by force of their active impulse and a certain importance as stimuli annul sleep (it may be), *it* must be trained upon all the gateways of stimulus, keeping watch at each. Without the stimuli co-operating physically or uniting at one place in the organism, there must be present in this tension or watching an original unity, a unity that unfolding outwards into a manifold, takes all stimuli into consideration at once. And it must spontaneously, in accord with its nature as an instinct inherently most essential to the organism, produce for every stimulus a sensation corresponding to its kind. . . . Thus for the sensory process only the following possibility remains: the sensation arises inasmuch as wakefulness prevents the physical action of the stimulus in the organism by producing an exact counterbalance to the latter. The sensory process is a balancing, accommodatory maintenance of organisation" (eine ausgleichende, anpassende Erhaltung der Organisation) (p. 75 f.).

I have given this first statement of the theory in Prof. Pikler's own words. I do not find his many other statements of it any more lucid or convincing. The rest of his book is an enthusiastic application of the theory to special cases, always in these very general and vague terms. One cannot but wonder very often what the "Erregungstheorie" has done or left undone to deserve such beating, and what is gained by handing the whole business over to this "ausgleichende anpassende Erhal-

tung des Organismus". It reminds us strongly of our old friend the ego positing itself so nimbly and gaily in its wonderful manifold, and needing no dead thing to stir its stuffless soul. There is too big a leap from the general differences of sleeping and waking to the special analysis of the finest sensory details.

"Sensory negation (*e.g.*, 'there is no red here') can with the greatest precision be defined as the repression of a hallucination to which we are inclined. For if the restrained disposition is not as such a complete disposition to sensation, it is inconceivable that its repression should yield the negation of the occurrence of a sensation." No-red is just as much a direct fact of perception as red.

"Sensation is the exercise of a capacity resident in me over whose exercise from within, and in accordance with my needs I have complete power and decision." "I see red exactly as I extend my arm, out of myself, spontaneously in an act of decision" (Nicht-sein hat seinen Ort und seine Zeit).

The special studies in this book are concerned with the application of the above formulas to a number of sensory problems—motion phenomena, stereoscopy by disparation of images, cinematography and the cinematographic nature of binocular vision, the geometrical optical illusions, the Ranschburg phenomenon, time-sense organ, and its manner of function, etc.

In the acoustical paper Prof. Pikler writes: "In the octave also [*i.e.*, just as in the comparison of a line twice the length of another] I perceive . . . double the pitch in comparison with the lower tone. If anyone is unable to make this comparison at once, let him take first the successive interval lower tone—major third, then the successive interval lower tone —fifth, and then finally the successive interval lower tone-octave, and he will now quite clearly perceive the double pitch of the lower tone in the octave." It is not a case of recurrence of quality or the like, but just of exactly the double pitch. And Prof. Pikler can even perceive in the fifth the relation, not of 2 : 3, but of half-duplication 1 : $1\frac{1}{2}$, "a relation that by the way is identical with the former, only livelier". And so on. I am fully persuaded that the sensory *volume* of a tone an octave higher than another is half (geometrically exactly or with certain functional latitude) that of the lower tone. And I have often done what Prof. Pikler now recommends in order to see if my ear and observation would confirm my inference. But, while they do not lead me to doubt the latter at all, and are even encouraging, I should not venture to assert that they precisely confirm it. If I wanted a confirmatory judgment, I must say I should not now accept either my own or Prof. Pikler's as being useful evidence, but only those given under certain very stringently controlled conditions. And even these would surely at the best be rather weak-kneed. Exactness in the auditory observation of doubleness as such is surely more than we can expect.

H. J. Watt.

Received also :—

W. R. Sorley, *A History of English Philosophy*, Cambridge University Press, 1920, pp. xvi, 380.

William Macpherson, *The Psychology of Persuasion*, London, Methuen & Co., 1920, pp. 256.

J. J. Findlay, *An Introduction to Sociology*, Manchester University Press, London, New York, Longmans, Green & Co., 1920, pp. xi, 304.

W. T. Stace, *A Critical History of Greek Philosophy*, London, Macmillan & Co., 1920, pp. xiv, 386.

Richard Duncan Taylor, *The Mystery of Life, as Interpreted by Science*, London and Felling-on-Tyne, The Walter Scott Publishing Co., 1919, pp. ix, 176.

Josiah Royce, *Lectures on Modern Idealism*, New Haven, Connecticut, Yale University Press, 1919, pp. xi, 266.

Knight Dunlop, *Personal Beauty and Racial Betterment*, London, Henry Kimpton, 1920, pp. 95.

René Kremer, *Le Néo-Réalism Américain*, Louvain Institut de Philosophie, Paris, Librairie, Félix Alcan, 1920, pp. x, 310.

Mons. Rodolfo Maiocchi, *Galileo e la Sua Gondana Bibliotecca di Coltura Religiosa*, Milano, 1919, pp. 224.

Francesco Olgiati, *Carlo Marx: Bibliotecca di Coltura Religiosa*, Milano, 1920, pp. xix, 337.

Fr. Agostino Gemelli, *Religione e Scienza*, Milano, 1920.

Emilio Chiocchetti, *La Filosofia di Benedetto Croce*, Milano, 1920.

A. G. Tansley, *The New Psychology: and Its Relation to Life*, London, George Allen & Unwin, 1920, pp. 283.

Marcel Labordère, *Une Profession de Foi Cartésienne*, Paris, Librairie, Armand Colin, 1919, pp. 142.

G. Noel-Armfield, *General Phonetics*, 2nd edition, Cambridge, W. Heffer & Son, 1919, pp. xii, 146.

William McDougall, *The Group Mind*, Cambridge University Press, 1920, pp. xvi, 304.

Raymond H. Wheeler, *The Synæsthesia of a Blind Subject*, Oregon University Press, 1920, pp. 61.

Milwoïe Pavlovitch, *Le Langage Enfantin*, Paris, Edouard Champion, 1920, pp. viii, 203.

St. George Lane Fox Pitt, *Free Will and Destiny*, London, Constable & Co., 1920, pp. xix, 100.

Louis Rougier, *La Philosophie Géométrique de Henri Poincaré*, Paris, Librairie, Félix Alcan, 1920, pp. 208.

Louis Rougier, *Les Paralogismes du Rationalisme*, Paris, Librarie, Félix Alcan, 1920, pp. xiv, 540.

Bernard Bosanquet, *Implication and Linear Inference*, London, Macmillan & Co., 1920, pp. ix, 180.

J. Alexander Gunn, *Bergson and His Philosophy*, London, Methuen & Co., 1920, pp. xxi, 190.

E. J. Urwick, *The Message of Plato*, London, Methuen & Co., 1920, pp xii, 263.

F. W. Westaway, *Science and Theology: their Common Aims and Methods*, London, Glasgow, and Bombay, Blackie & Son, 1920, pp. xiii, 346.

A. Einstein, *Relativity*, translated by Robert W. Lawson, London, Methuen & Co., pp. xiii, 138.

Florian Cajori, *A History of the Conceptions of Limits and Fluxions in Great Britain from Newton to Woodhouse*, Chicago and London Open Court Publishing Co., 1919, pp. viii, 299.

VIII.—PHILOSOPHICAL PERIODICALS.

THE BRITISH JOURNAL OF PSYCHOLOGY. Vol. ix., Parts 3 and 4. **John Laird.** 'The Psychological Interpretation of Sense Data.' [Exposes the inadequacy of the theory that sense data do not belong to the subject-matter of psychology, and the falsity of the view that presentations are fictions. A detailed discussion of visual sense data leads to the conclusion that "meaning" belongs to a visual presentation in precisely the same sense as shape and colour, meaning being here limited to "presented meaning" and not including logical implications. In "complication" we have an example of a non-visual meaning of a visual presentation. Other kinds of sense data are similarly discussed, as is also the development of sense data.] **Carveth Read.** 'The Unconscious.' [Discusses physiological aspects of various Freudian ideas in reference to instinct, repression, unconsciousness, and dissociation, and connects with the doctrine of repression such phenomena as inattention to what is biologically without interest. Defends explanation by physiological processes as necessary, there being no absolutely independent science of psychology. Volitional repression operates through the counteracting of motor expression, including language. Ninety-nine per cent. of our forgetting is merely due to unimportance of impressions or idea, and many slips are due to "organic disrepair".] **Victoria Hazlitt.** 'The Acquisition of Motor Habits.' [A record of experiments on the learning of mazes by rats. Results show that with practice rats improve in ability to acquire motor habits, and that any hindrances to learning which may be offered by the survival of old habits are more than counterbalanced by the mastery which the practised rats gain over the general situation. The practised rat runs more quickly, enters blind alleys less often, very seldom returns on his path, and he seems much less upset by making a mistake than the unpractised rat.] **Godfrey Thomson.** 'The Proof or Disproof of the existence of General Ability.' [Examines some typical conclusions based on a comparison of entire and partial correlation coefficients in psychology and pedagogy; shows that the comparison of a partial correlation coefficient $r_{12 \cdot 3}$ with an entire coefficient r_{12} is no sure guide of the extent to which the connexion of 1 and 2 is via 3. Concludes that there have been made sweeping deductions as to the presence of general ability in many forms of activity, based upon methods depending largely, if not entirely, on a misinterpretation of the methods of partial correlation.] **Godfrey Thomson.** 'The Hierarchy of Abilities.' [Replies to Prof. Spearman's criticism of another earlier investigation on "A Hierarchy without a general factor" and offers the following theory of ability as being consonant with results reached. The mind in carrying out any activity such as a mental test, has two levels at which it can operate. The elements of activity at the lower level are entirely specific, but those at the higher level are such that they may come into play in different activities. Any activity is a sample of these elements. The elements are assumed to be additive like dice, and each to act on the

"all or none" principle, not being in fact further divisible.] **J. C. M. Garnett.** 'General Ability, Cleverness, and Purpose.' [Shows how confusion is likely to arise in discussions of the question whether correlations obtaining between a set of mental tests are due, on the one hand, to a single general factor—"general ability"—entering without group factors into all of the qualities tested, or, on the other, to an indefinitely large number of independent factors each of which may enter as a group factor into any two or more of the tests.] **J. C. M. Garnett** and **Godfrey Thomson.** 'Joint Note on the Hierarchy of Abilities.'

JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS.—xvii., 3. **B. Ruml.** 'The Need for an Examination of Certain Hypotheses in Mental Tests.' [Comments on the "astonishingly meagre results in theoretical value" of these tests, and suggests that intelligence being 'multi-dimensional' is not properly represented by linear measurements.] **A. K. Rogers.** 'Professor Strong's Theory of "Essence."' [Charges it with ambiguity]. **R. C. Lodge.** 'Tests of Truth.' [First shows, after the manner of Cook Wilson, that an (absolute) criterion is involved in an infinite regress, that "there is a gap between absolute truth, with its universal and necessary criteria *a priori*, and the concrete truths with which human experience and the specific are concerned," and that it is "hopeless to attempt to bridge this gap . . . between empirical truths . . . and metaphysical Truth . . . from the more metaphysical side," and then proceeds to do so "from the more empirical side" by suggesting "the development of science into better science" . . . "towards a better, finer, truer, more scientific knowledge". This would appear to be really the pragmatic solution of the problem.] xvii., 4. **J. T. Shotwell.** 'Christianity and History, I.' [Points out that Christianity did not enlist the services of a first-rate historian in its beginning, and that its other-worldliness was unfavourable to historiography.] **H. H. Parkhurst.** Report on the 19th Annual Meeting of the American Philosophical Association. xvii., 5. **J. T. Shotwell.** 'Christianity and History, II. Allegory and the Contribution of Origen.' [Owing to the Messianic element in it, Christianity was also a historical religion, which rejected the allegorical interpretations of Origen and developed an elaborate chronology from the creation of the world to the birth of Christ.] **J. Warbeke.** 'A Theory of Knowledge which Foregoes Metaphysics: A Reply to Dr. Schiller.' [*Cf.* xvi., 20; explains that by metaphysics he means "a systematic effort to co-ordinate our most general assumptions into logical coherence," but will not allow assumptions to be made 'methodologically'.] **A. I. Gates.** Report on the 28th Annual Meeting of the American Psychological Association. xvii., 6. **J. T. Shotwell.** 'Christianity and History, III. Chronology and Church History.' [On the importance of Eusebius.] **M. T. Collins.** 'Spaulding's Freedom of the Reason.' [In each of three senses it ultimately involves indeterminism.] **G. Boas.** 'A Note for the History of Affective Psychology.' [On J. J Reich's dissertation of 1695 on the bodily effects of the emotions.] xvii., 7. **W. T. Bush.** 'The Present Situation in Philosophy.' [A discussion of N. K. Smith's Inaugural Lecture in a spirit of an 'empirical' idealism, to which scientific Naturalism leads, and which does not demand superhuman values or *a priori* knowledge. For it "judgments that claim universal validity . . . are either descriptions of natural regularities observed and remembered, or rules of procedure," so that "that the rule will work this time as it has in the past is a methodological assumption, never a metaphysical discovery in advance of the fact."] **I. Babbitt.** 'Rousseau and Conscience.' [Reply to Schinz's review

in xvii., 1. For Rousseau conscience was an 'emotion'.] xvii., 8. **W. D. Wallis.** 'Motive and Caprice in Anthropology and History.' [Both have two motives, the descriptive and the speculative, which cannot be separated, because narrative must select and selection implies valuation.] **W. M. Salter.** 'A note on Dr. Strong's Realism.' [A further attack on his theory of 'essences,' which really "exist only in thought and have no part in an ontological or epistemological explanation of things".] **R. C. Lodge.** 'The Logical Status of Elementary and Reflective Judgments.' [Holds that for 'modern logic' judgment is not '*Urteil*' but '*Beurteilung*,' and that properly "there is only one judgment in this sense, the transcendent ideal of Omniscience," so that " if we care to speak of 'judgments' at all, in the sphere of finite human thinking, we can legitimately refer only to the methodical attempts to approximate to realising this ideal of judgment". So "the reference to reality should be explicitly recognised as mediate, far-off . . . and 'judgment' will mean, not completed judgment but this progressive advance in consistency and individuality, this taking one step nearer to the indefinitely distant goal." It is assumed throughout that the formal claim to refer to 'reality' is a sufficient guarantee of the success of the reference, even though admittedly this could be tested only if 'omniscience' were reached.]

Revue de Métaphysique et de Morale Novembre-Decembre, 1919. **O. Hamelin.** 'La volonté, la liberté, et la certitude d'après Renouvier.' [Renouvier's treatment of freedom and determinism is perhaps his best work. But he restricts the sphere of will, and even of mind, in a way that fails to do justice to the facts and fits in but ill with his general views.] **L. Weber.** 'Les derniers progrès de la physique.' [An admirable accouut of the progress of physics since the war. Discusses the theory of relativity and its opponents, the theory of quanta and its applications in Bohr's atomic model, and the work of the Braggs on the atomic structure of crystals. Regrets the small part taken by French scientists in these great advances.] **R. Lenoir.** 'La psychologie de Ribot et la pensée contemporaine.' [Ribot's work, valuable as it is, was the product of its age, and contains certain exaggerations due to its being a protest against the intellectual stagnation of the Second Empire.] **A. Meillet.** 'De la formation des maîtres primaires.' **Th. Ruyssen.** 'La controverse nationalitaire.' [Natural boundaries and racial characteristics are not the real criterion of nationality; they are too indefinite to be the actual forces that bind together communities. Language and tradition are probably the most important factors, but even they only operate strongly when continually forced on popular attention either by the attempts of aliens to destroy them or by those of intellectuals to preserve or restore them. Extreme insistence on the rights of small nationalities can only lead to anarchy; but there is some hope in the principle of allowing them a good deal of autonomy within larger states, on condition that they will not make themselves too troublesome.] 'Nécrologie.' Georges Siméon (1888-1919). [Contributed articles to the *Revue* from the trenches on the philosophy of patriotism. Died of the after-effects of poison-gas.] Janvier-Mars, 1920. **V. Delbos.** 'Les facteurs kantiens de la philosophie allemande.' [Traces the notion of *a priori* system, and the steadily increasing emphasis on it, as against the particular sciences, from Kant through Reinhold, Fichte and Schelling, to Hegel. Fichte's assumption of intellectual intuition is only verbally opposed to Kant's denial of it; for Fichte rejected things-in-themselves, and Kant used the term to denote a supposed knowledge of such objects. The Kantian analogue to Fichte's intellectual intuition is our knowledge of the moral law.] **R.**

Mourgue. 'Le point de vue neuro-biologique dans l'œuvre de M. Bergson.' [Holds that recent advances in the physiology and pathology of brain and nervous system have tended strongly to support Bergson's views as to their nature and functions. A long article with a very full bibliography.] **G. Davy.** 'Durkheim' (*suite*). ['D.'s ultimate object was to work out a scientific moral philosophy. But he saw that this depends on the nature of man, and that the latter is not given once for all but varies with the type of society in which he lives. Hence his sociological studies. As a sociologist he regarded societies as complexes with special laws of their own which are not deducible from any amount of knowledge of their constituents in isolation. Hence his refusal to subordinate sociology either to biology or to psychology whether individual or social. There was nothing in the least mystical in this attitude of D.'s; he simply recognised irreducible facts and refused to be bound by the dogma that all explanation to be scientific must be mechanical. He has been accused quite unjustly of materialism; but he simply studied material products as permanent signs of the living activities of societies; and, particularly in his later work, he insisted on the importance of ideal factors in the life of societies. (A very able article.)] **G. Marcel.** 'Les "Principes Psychologiques" de J. Ward. [A highly appreciative synopsis of Ward's work, ending however with a doubt whether Bradley is not nearer the truth on the subject of attention.] 'Nécrologie.' [Georges Lechalas (1851-1919); Paul Lacombe (1834-1919).] Reviews of books and journals.

Revue Néo-Scolastique de Philosophie. No. 84. November, 1914-1919. **Louvain.** [A word of heartfelt congratulation on the reappearance of this review for the first time since the fatal summer of 1914. All of us will heartily sympathise with the noble and dignified words of the editor (M. Maurice de Wulf) in his opening address to his readers. The last five years ought to be enough to convince thinking men once for all of the bankruptcy of "relativism" in ethics and the need for insistence on "immutable and eternal" morality, even if some of us cannot forget that it is precisely the two philosophers to whom neo-scholasticism never seems able to be quite just, Plato and Kant, who have historically done the most for the "good cause". At least we shall all be at one in wishing the *Revue* a long and illustrious life, and hoping that its very able contributors will continue to render solid service to the cause of true science and sound morality. But is M. de Wulf altogether well-advised in making common cause with "new realists" here and in the United States against what he calls, by the usual Thomist misnomer, the "agnosticism" of Kant? Can he be aware how closely allied the "new realist" movement is with an atheism as repugnant to Kant as it is to himself?] Contents. **H. Pinard.** 'Sur la Convergence des Probabilités.' [First part of an essay which aims at proving that a convergence of probabilities may be sufficient to establish certainty and at explaining the logic of the procedure.] **H. Lebrun.** 'La Théorie de la Mutation' (*concl.*) [Conclusion of a study begun before the war. De Vries has the merit of having "bridged the gulf" between the partisans of immutably fixed species and the "transformists," Lamarck and Darwin. His conceptions agree with the facts of palæontology and the Christian conception of creation. But his theory is not complete, and can give no explanation of the adaptation of organisms to their environment.] **A. Farges.** 'Le Sens Commun.' [Chiefly directed against Bergson. "Common sense" = the agreement of mankind on certain very elementary truths, especially those necessary for the conduct of life. M. Farges regards this agreement as sufficient to refute, *e.g.*, the philosophy of Berkeley, which he seems not to understand, and apparently also the arithmetic of transfinite numbers. The direct purpose of the

article is to insist upon the incoherencies in the thought of Bergson and Le Roy, but M. Farges seems to think the appeal to "common sense" sufficient to discredit all modern philosophers, with perhaps a partial exception in favour of Reid.] **G. Lechalas.** 'Identité et Réalité d'après M. Meyerson.' [Conclusion of a very able article on the presuppositions of physical science.]

Archives de Psychologie. Tome xvii., No. 3. **J. L. des Bancels.** 'Instinct, émotion et sentiment.' [James was concerned with the mechanism (reflex) and content (organic sensation) of emotions, and hardly touches the question of function. In fact, emotion is the default, the misfire of instinct. Sensory pain (*douleur*) is to be distinguished from affective unpleasantness (*peine*), which signals danger as pleasantness signals safety to the organism. It is impossible to choose between central and peripheral theories of feeling, though the latter are the less speculative.] **H. Flournoy.** 'Symbolismes en psychopathologie.' [Symbolism sometimes shows on the face of the record, sometimes must be sought by patient analysis; sometimes is explained by the subject, sometimes is revealed indirectly by associations. Five cases (dream, hallucinatory episode, hysterical spasm, infantile rite, flag-design of a paranoidal dement) are quoted in illustration.] **H. Flournoy.** 'Quelques remarques sur le symbolisme dans l'hystérie.' [Description of a case of hysteroorganic association (symbolisation with imitation). It is not necessary in every instance to have recourse to the sexual motive; aside from that, the Freudian explanation by apperceptive insufficiency is adequate. In any event there is no 'proof' of symbolism: one must study a long series of cases, and use common sense.] **C. E. Guye.** 'Réflexions sur la classification et l'unification des sciences, àpropos du principe de relativité.' [The sciences may be classified according to their subsumption under the primordial concepts of number, space, time, matter, life and thought. They can be unified only as relations are established among these seeming ultimates, and here the principle of relativity promises to do good service.] Bibliographie.—Tome xvii., No. 4. **L. Cellérier.** 'Des réactions organiques accompagnant les états psychologiques.' [A review of published work (rate of pulse, peripheral volume) shows that there is a constant reaction to activity, physical or mental, but no specific, characteristic, constant reaction to pleasantness and unpleasantness. The 'affective' reaction is in truth a reaction of activity.] **R. de Saussure.** 'Apropos d'un disciple d'Unternährer.' [A study of the life and writings of Unternährer (a Swiss mystic of the 18th century, founder of a still persisting sect), in the light of the history and behaviour of a paranoiac disciple, suggests a condition of sexual inferiority.] **Y. Delhorbe.** 'Recherches sur la corrélation entre la mémoire des mots et la mémoire des images.' [Experiments on 40 boys and 8 girls, from 10 to 14 years of age, with series of words and of pictures of single objects, yield so high a correlation that it will be needless in future to test both forms of memory. At least three tests are required as a basis of inference.] **E. Claparède.** 'Percentilage de quelques tests d'aptitude.' [Normal tables of 10 tests for individuals of both sexes from 7 or 8 years of age to maturity.] **E. Claparède.** 'De la constance des sujets à l'égard des tests d'aptitude.' [The results of a number of tests, repeated 4 or 6 times, indicate a constancy sufficient for general but not for individual psychology. They leave it uncertain whether the most representative value is the arithmetical mean, the median or the maximum.] Recueil de Faits: Documents et Discussions. **C. Werner.** 'XIV^{me} réunion des philosophes de la suisse romande.' Bibliographie. Nécrologie. Notes diverses.

ZEITSCHRIFT F. PSYCHOLOGIE. Bd. lxxv., Heft 1 und 2. **C. Stumpf.** 'Apologie der Gefühlsempfindungen.' [Detailed discussion of the objections raised to the theory of centrally excited concomitant sensations by Brentano, Külpe, Titchener, Ziehen, and briefer reply to Becher and Oesterreich.] **C. Stumpf.** 'Verlust der Gefühlsempfindungen in Tongebiete (musikalische Anhedonie).' [Case of a player in a military band ('cellist and bassoonist) who, without impairment of hearing (except that the noisy component of compound tones is somewhat unusually pronounced), has lost all direct pleasure in hearing or performance; interpreted as loss of affective sensation in the sense of the writer's theory.] **G. Heymans.** 'In Sachen des psychischen Monismus, iii.' [(1) The question why we perceive objects and not brain-processes, in so far as it offers a real problem, is answered by the importance which the object possesses, by way of community and causality, for our knowledge of nature. (2) Life is like dream in that both afford material of knowledge; but the limitations and unreliability of dream-knowledge are due to circumstances which have no parallel in life.] Literaturbericht. Bd. lxxv., Heft 3 und 4. **J. Pikler.** 'Ueber verdoppelnde und vereinfachende Kinematographie und die kinematographische Natur des binokularen Sehens.' [If there are double images in the field, and the one eye is alternately closed and opened, the corresponding image apparently moves to and from its fellow. From this and similar observations the writer argues (against Hering) to a unitary sensation-process which represents a spontaneous and teleological adaption of the organism to its visual surroundings.] **H. Henning.** 'Der Geruch, iii.' [Deals with recognition (familiarity, unfamiliarity, strangeness; typical cases), fatigue, after-effect and toxic effects. Aronsohn's experiments on quick adaptation and resulting partial anosmia are not confirmed. Odorous particles embedded in the mucous membrane have a long after-effect; hence Aronsohn's experiments with liquids are also untrustworthy. Many of the unpleasant concomitants and after effects of narcosis are attributable to the sense of smell.] Literaturbericht. Bd. lxxv., Heft 5 und 6. **A. Goldscheider.** 'Ueber die physiologische Psychologie des Willensvorganges.' [Ziehen's associative account of attention and will must be declared a failure. It is true that interested attention derives from constrained attention, and that the process of will appears as the outflow of stored mental energy due, in part at least, to the unused remainders of psychical stimuli; will is, nevertheless, an autonomous activity of consciousness. The process of will requires neither a motivating feeling nor an antecedent complex of idea and desire; it may inhibit feeling; and Wundt's identification of volition with emotive course goes much too far. Will is not itself experienceable as content of consciousness: the concept derives from the experience that fulfilment follows desire as the result of an intraconscious cause.] **C. Stumpf.** 'Binaurale Tonmischung, Mehrheitsschwelle und Mitteltonbildung.' [The binaural tone-mixture of von Liebermann and Révész is a matter simply of the differential limen of simultaneous tones and of the formation of a middle tone from near-lying primaries.] Literaturbericht. Bd. lxxvii., Heft 3 und 4. **K. Groos.** 'Untersuchungen über den Aufbau der Systeme: vii. Die monistische Lösung.' [Discusses various types and psychological motives (intellectual, emotional) of monistic thought; the parallelistic monism of Spinoza and of later writers (Mach and Wundt; Leibniz, Kant, Stern); materialistic monism; critical monism (Riehl); psychical monism (Heymans) and its critics (Becher). In conclusion the author considers the viability of a monadological monism, according to which our mind is the *Ansich* not of the brain but of a single *Uratom* of the brain (such a view avoids mental atomism and allows immortality), and also the possibility of a twofold

parallelism, of atoms with an X of potential activity, and of space (continuum, void) with mentality.] **K. Lewin.** 'Die psychische Tätigkeit bei der Hemmung von Willensvorgängen und das Grundgesetz der Assoziation.' [Experiments upon the transposition and rhyming of meaningless syllables show that neither consecutive repetition nor *Aufgabe* suffices to establish association. Everything depends on the nature of the 'activity of performance' which runs its course between instruction and reaction. To secure association, the experimenter must secure a readiness of reproductive 'activity' (in this technical sense) before his presentation of the one term of the pair; it is also important, though seemingly not essential, that the two members have been originally conjoined by the same 'activity'.] **W. Koehler.** 'Die Farbe der Sehdinge beim Schimpansen und beim Haushuhn.' [Experimental rebuttal of Katz' criticisms.] **G. Wolff.** 'Zur Frage des Denkvermögens der Tiere.' [Report of tests on Krall's blind horse Berto, whose powers are upheld against the criticism of 'Faustinus'.] Literaturbericht. Bd. lxxvii., Heft 5 und 6. **A. Gelb** mit Unterstützung von **M. Bentley.** 'Bibliographie der deutschen und ausländischen Literatur des Jahres 1915 über Psychologie, ihre Hilfswissenschaften und Grenzgebiete.' [2635 titles, as against 2642 for 1914.] Bd. lxxviii., Heft 1 und 2. **W. Stern.** 'Die Psychologie und der Personalismus.' [Advocates 'critical personalism' as the doctrine which shall set psychology in its right relation to philosophy. The teleological series phenomenon, act, disposition (faculty), ego is paralleled on the physical side by the series phenomenon, act, disposition, organism. Ego and organism are then integrated in the psychophysically neutral concept of person; and the co-operation of person and world (viewed hitherto as nativistic or empiristic) becomes an affair of 'convergence' in which outer determination and inner purpose are alike involved.] **F. Seifert.** 'Zur Psychologie der Abstraktion und Gestaltauffassung.' [Experiments on the positive abstraction of colour and form, with formed and formless complexes, undertaken to determine the influence of participation-in-form upon the abstractive process. Form works against abstraction: first, by exercising a direct constraint upon the element to be abstracted, by way of functional inclusion and of levelling or assimilation; secondly, by absorption or diversion of attention. The paper discusses the stages in abstraction; positive and negative abstraction; the psychology off orm (*Gestalt*); and reports quantitative experiments with stimuli of the sort used by Grünbaum and Moore.] Bd. lxxviii., Heft 3 und 4. **J. Lindworsky.** 'Voruntersuchungen über die Perseverationstendenz der Vokale in der geordneten Rede.' [Raises the question whether in connected discourse, free of technical terms, stylistic variation, etc., the accented vowels show a tendency to perseveration. Experiments by a modification of Marbe's method (number of syllables between repeated vowels; discrimination of verbal and phrasal accent) give a probably affirmative answer. The writer seeks to account for exceptions and individual differences.] **G. J. B. Muller.** 'Die Assoziation sukzessiver Vorstellungen.' [Münsterberg's denial of successive association is not warranted; his results may be accounted for by distraction of attention and ideational type.] **H. Henning.** 'Versuche über die Residuen.' [Ranschburg's neuropsychological law of sensory fusion (physiological inhibition) of similars is traversed by Aall's doctrine of ideal residua. Critical examination of previous work, and new experiments (mnemometer, tachistoscope) shaped directly to the issue, prove that the supposed 'fusion' is always a matter of cognition, *i.e.*, of the residual component. Ranschburg's memory-results are due to the familiar associative inhibitions. Finally, experiments by the writer's method of two-word

association, with various kinds and degrees of similarity between the stimulus-words, show the importance and throw light on the character of the residua.] Literaturbericht. Bd. lxxviii., Heft 5 und 6. **P. Zimmermann.** 'Ueber die Abhängigkeit des Tiefeneindruck's von der Deutlichkeit der Konturen.' [Experiments with skeleton prisms (dark, light; various backgrounds; viewed with naked eyes, through lenses, through turbid liquids) indicate that whatever makes for clearness of outline enhances the impression of depth; Jaensch's exploratory attention is unnecessary. Depth is also favoured by the appearance of substantiality (Jaensch's *Zwischenmedium*).] **J. S. Szymanski.** 'Versuche über die Entwickelung der Fähigkeit zum rationellen Handeln bei Kindern.' [Children from 5 to 10 were required to sweep the gravel from a small spiral maze. At 9 the correct actions occur in 75 per cent. of the tests.] Literaturbericht. Bd. lxxxii., Heft 5 und 6. **K. Koffka.** 'Beiträge zur Psychologie der Gestalt—und Bewegungserlebnisse: iv. Zur Theorie einfachster gesehener Bewegungen, ein physiologisch-mathematischer Versuch.' [Seeks, on the basis of Korte's laws of the intervariation of spatial separation, time interval and intensity of stimulus as conditions of the perception of visual movement (vol. lxxii.), to answer in a formal way the questions where and when the two excitations meet, *i.e.*, to construct a schematic brain-process from which the laws are derivable.] **R. Prantl.** 'Die Schnelligkeit des optischen Erkennens als Funktion der Objektlage.' [Experiments on the reading of words turned, in the ordinary plane of reading, to the various points of the compass. All deviations from the normal position decrease the speed of reading; the decrease is greatest at 150° and 210° (here the time required is about 4 times the normal); there is a slight recovery at 180° (about 3·7 times the normal). The experiment has a differential significance.] **H. Henning.** 'Prüfung eines Wünschelrutengängers durch eine wissenschaftliche Kommission.' [Test of a patented divining-rod for the discovery of metals, etc., carried out by a scientific committee in the presence of the inventor. All trials made without knowledge, indoors and in the field, gave negative results.] Literaturbericht. Bd. lxxxiii., Heft 1 und 2. **K. Goldstein** und **A. Gelb.** 'Ueber den Einfluss des vollständigen Verlustes des optischen Vorstellungsvermögens auf das taktile Erkennen: zugleich ein Beitrag zur Psychologie der taktilen Raumwahrnehmung und der Bewegungsvorstellungen.' [Case of a 24-year-old labourer whose wound (1915) affects the left occipital lobe; the visual phenomena have been dealt with in the *Zeits. f. d. ges Neurologie u. Psychiatrie* for 1918. With eyes closed and body at rest the patient cannot localise at all; by help of twiching movements he 'localises' reflexly without idea of place of stimulation. The resting skin feels two simultaneous pressures as one; with movement there is an æsthesiometric limen. With body at rest the patient cannot tell the position of a limb; he has, however, learned by heart certain characteristic kinæsthetic complexes, and by their aid can argue to a conclusion. With eyes closed he finds extreme difficulty in the execution, and especially in the initiation, of a voluntary movement. He is able, by feeling an object which he does not recognise by touch, to make a very fair drawing of it; he is, however, unable to recognise the drawing, which is not for him a 'copy' of the object, but a spontaneous construction. After discussing these and many other observations of detail, and bringing the results into relation with normal behaviour, the authors distinguish two kinds of 'idea of movement,' the idea of the member to be moved and the idea of the movement itself, ideas which have too often been confused; and thence proceed to a general theory of tactual space. Their thesis is that there is no such thing as a *Tastraum* (cutaneous and kinæsthetic), in

spite of what has been written about the congenitally blind: space gets into our tactual experiences by way of vision, and the only space of experience is therefore visual. A very important paper, which should be read in connexion with that of 1918.] **K. Buehler.** 'Replik.' [Reply to Henning.] Literaturbericht. Bd. lxxxiii., Heft 3 und 4. **H. Friedlaender.** 'Die Wahrnehmung der Schwere.' [Experiments with lifted weights, under the sensory and the objective attitudes. After an analytical description of the experiences, the writer passes to the conditions of the perception. Subcutaneous sensations (probably tendinous) are adequate without cutaneous pressure, and cutaneous pressure alone is also adequate; duration, area, and intensity of stimulus are of importance. On the subjective side, anything that interferes with the normal associative connexion makes against objectification. Discriminative sensitivity is somewhat more delicate in the objective attitude. Objectification depends upon direction of attention to the visual (perceived or ideated) object and a sufficient number of like experiences in the past. It is probable that sensations of all sense-departments may be thus objectified.] **O. Selz.** 'Komplextheorie und Konstellationstheorie.' [Argues, against G. E. Müller, for a fundamental difference between the constellation of the associationists and the complex of the thought-psychologists, and for the justification of the latter concept.] **A. Fischer.** 'Zur Abwehr.' [Reply to Henning and Müller, in behalf of Meinong and Witasek.] Literaturbericht. Bd. lxxxiii., Heft 5 und 6. **E. R. Jaensch.** 'Ueber Grundfragen der Farbenpsychologie: Zugleich ein Beitrag zur Theorie der Erfahrung.—Vorbemerkung. [Plea for greater rigour of method and less indulgence in controversy.] **E. R. Jaensch** und **E. A. Mueller.** 'i. Ueber die Wahrnehmung farbloser Helligkeiten und den Helligkeitskontrast.' [After showing that the phenomenon of transformation (subjective compensation of illumination) is not dependent, as Hering supposed, upon contrast, pupillar variation, and adaptation, the writers prove by a series of 'parallel' experiments that the same laws obtain for transformation as for contrast. For both, *e.g.*, the effect increases proportionally to the white valence of the in-field, save in the region of indifference (subjective equality), where it transcends this proportionality; for both, the subtraction of equal amounts of objective light means the disproportionate reduction of the subjective brightness of the dark-surrounded in-field; for both, equations are unchanged with proportional change of all valences concerned; etc. Theory is to follow later.] **E. R. Jaensch.** 'ii. Parallelgesetz ueber das Verhalten der Reizschwellen bei Kontrast und Transformation.' [Katz' law of transformation holds also of contrast: a liminal brightening requires the same increment of objective light, whether the in-field is lightened or darkened by contrast; Katz' inference to constancy of psychophysical intensities is, however, ungrounded.] Literaturbericht.

Archiv f. d. ges. Psychologie. Bd. xxxviii., Heft 1 und 2. **J. K. Von Hoesslin.** 'Das Gesetz der spontanen Nachahmung.' [Spontaneous imitation is due to the reproduction (Semon's ecphoria) of analogous ideas by similarity; and the effective moment of 'similarity' is formal synthesis or form-quality.] **H. Schole.** 'Ueber die Zusammensetzung der Vokale *U*, *O*, *A*.' [Experiments on reed-tones, taken down and built up partial by partial (control by tonoscopic discs and smoke-rings), and on sung vowel-transitions (subjective control). The pure tone has a vocal colouring (Köhler). Sung vowels are compound tones of harmonic structure (Helmholtz). The individuality of the

vowel depends, in the first instance, upon the absolute pitch of especially intensive partials (here is a resemblance to Hermann and the formant-theory), whose prominence is due in most cases to reinforcement by buccal resonance, sometimes to the damping of other partials. An important paper, whose results are in general agreement with those reached by Stumpf (also by the method of interference) and reported in the *Berichte* of the Prussian Academy.] **O. Klemm.** 'Untersuchungen über die Lokalisation von Schallreizen: iii. Ueber den Anteil des beidohrigen Hörens. [Experiments leave no doubt that as regards intensive discrimination, temporal discrimination, and judgment of distance, the two ears function together better than (for example) two microphones or other mechanical appliances set at the same distance apart; there is a *Steigerung der Gesamtleistung*. The problem of binaural localisation will find its solution only when this conjoint functioning is understood; the writer sums up what is so far known. In audition, there is no shift of the 'local signs' such as Stratton found for vision.] **H. Werner.** 'Ueber optische Rhythmik.' [(1) Experiments in which a rhythmical motor memory is interrupted, and an actual motor rhythm is complicated, by auditory, tactual and visual series, prove that there is a true visual rhythm; rhythmisation is more difficult than for auditory, easier than for tactual series. (2) The subjective periodicity of regularly recurrent flashes, varied in intensity or duration, depends on the set of the observer. Increase of intensity or time, with apperception of the flashes, means a slowing (optimum, 0·3 to 0·4 sec.), and with apperception of the pauses, a quickening of the series (optimum, 0·7 to 0·8 sec.). (3) The subjective periodicity of an accented visual series depends both upon formal (rising or falling phrase) and upon material set (apperception of light or dark).] **V. Benussi.** 'Anmerkung.' Bd. xxxviii., Heft 3 und 4. **A. A. Gruenbaum.** 'Negative Abstraktion und Nebenaufgabe.' [Reply to the criticisms of Achenbach in vol. xxxv. Primary and secondary instructions are integrated in a determinate order of rank, and negative abstraction is psychologically as positive as positive abstraction.] **A. A. Gruenbaum.** 'Untersuchungen über die Funktionen des Denkens und des Gedächtnisses: iii. Assoziation und Beziehungsbewusstsein; Versuch einer psychophysiologischen Theorie der Reproduktion.' [The doctrine of association takes account of only one type of element, the 'ideas' and like contents, and of only one type of connexion, that which shows itself in the mechanics of reproduction; it cannot do justice even to attention. Physiologically, however, we have regional as well as local activity, a total-factor as well as the particular effect. The dynamic consciousness of relation may be correlated with the intracellular representation of this total-factor and of the processes of conduction in medullated nerve; we have first a conscious predisposition to reproduction, then an undifferentiated consciousness of 'sphere,' and then the play of the associative mechanisms. Association and the act of relation thus reflect stages in the development of a single complex physiological process.] **A. A. Gruenbaum.** 'Untersuchungen über die Funktionen des Denkens und des Gedächtnisses: iv. Assoziation und Organisation; Zur Einleitung in eine Strukturlehre des Bewusstseins.' [Renewal of the critique of associationism, with especial reference to Michotte and Rancy. Psychical connexion is never mechanical; it has the character of 'organisation'. There are two main types of such connexion: the objectively orientated (here, under the cross-headings of material and principle of organisation, we distinguish forms, schemata, relations of reality, and concepts) and the dynamically articulated; they are, however, in the concrete case, as closely interwoven as are contents and functions.] **M.**

Pasch. 'Mathematik und Logik: i. Ueber innere Folgerichtigkeit.' [A narrative may be tested for contradictions of the first order (in or between its sentences) by strict intercomparison of the parts. There is no general test for contradictions of the second order (between two inferences, or between a sentence and an inference). Where possible, we first formalise and then arithmetise the narrative, making arithmetic the court of last resort. But then we should treat arithmetic itself in the same way.] **M. Pasch.** 'ii. Ueber den Bildungswert der Mathematik.' [Modern mathematics is characterised by an extraordinary refinement of procedure, but also by a widespread looseness in the use of concepts; instruction in school and university is therefore largely ineffective.] **M. Pasch.** 'iii. Forschen und Darstellen.' [Plea for rigorous deductive procedure and complete exhibition of the steps of the argument.] **M. Pasch.** 'iv. Der Aufbau der Geometrie.' [The mathematician may be content with a 'hypothetical' geometry. Application demands an empiristic foundation, which must be worked out in full detail.]

Archiv f. d. g. Psychologie. Bd. xxxix., Heft 1 und 2. **W. Resch.** 'Zur Psychologie des Willens bei Wundt.' [Traces the development from heterogeny to autogeny, from activity to element, in four stages: (1) the intellectualistic background; (2) the approximation to the reflex and the bracketing of will with apperception; (3) discrimination from the reflex and insistence of the affective nature of will and apperception; and (4) the processes of will as affective courses with the background of the doctrine of elements.] **J. Wittmann.** 'Die Invertierbarkeit wirklicher Objekte.' [Historical survey; record of experiments, binocular and monocular. Burmester's theory of perspective involution will not hold water: the conversion is not necessarily either unequivocal or complete. Wundt's fixation-theory is also untenable. Observations on colour and light-and-shade correct Mach and Burmester; observations on objectivity in the main confirm Wheatstone.] **P. Mueller.** 'Verlauf einer vorbereiteten Willensbewegung.' [Reactions to the transit of an artificial star (stroboscopic arrangement). Continuous record of the key-pressure and extinction of the light at different points of its course permit the ascertainment of the two temporal limens of disturbed and undisturbed reaction. With the anticipatory attitude, the difference between these limens (the duration of the development of the impulse) averages 64 σ, irrespective of the star's rate of movement and distance from the meridian; with the reactive attitude the limens coincide.] **H. Lehmann.** 'Kulturpsychologie und Geschichtstheorie (im Umriss).' [Syllabus. In spite of the lack of continuity and individuality, the attribution of motive in psychological terms is the only method of pre-history.]

B
1
M65
n.s.v.29

Mind

PLEASE DO NOT REMOVE
SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO
LIBRARY